UNIVERSITY OF SOUTHAMPTON

FACULTY OF BUSINESS, LAW AND ART

Southampton Business School

Blockholders and Corporate Governance

by

Su Wang

Thesis for the degree of Doctor of Philosophy

April 2018

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

FACULTY OF BUSINESS, LAW AND ART

Southampton Business School

Thesis for the degree of Doctor of Philosophy

BLOCKHOLDERS AND CORPORATE GOVERNANCE

Su Wang

Blockholding has long been perceived as a harmful force to corporate governance due to its alleged exacerbation of minority expropriation, which is the core theoretical justification of recent worldwide 'anti-blockholding' regulatory movements. However, two facts should not be neglected that, first, although blockholding imposes risks of deepening Type II agency conflicts in public companies, it serves a crucial corporate governance role to minimise the Type I agency problem. Therefore, whether tightening rules that might disincentive blockholding is warranted can only be determined if the expected benefits outweigh associated costs. Second, while theories suggest that concentration empowers blockholders to expropriate minority shareholders' interests, it is largely based on an over-simplified assumption that blockholders are homogeneous, sharing the same incentives and behaviours.

To this end, viewing corporate governance as the reflection of a firm's agency conflicts, this thesis aims to facilitate a more balanced view with a focus on disentangling the interactions between corporate governance and the nature of blockholders; particularly effects from the most passive blockholder type – state, and the most active type – hedge fund activists.

Seeing audit fee as an indicator of firm's extent corporate governance effectiveness, the thesis first examines the individual and joint impacts of the controlling shareholder's (CS's) three attributes – types, the level of control and control-ownership wedge – on audit pricing of Chinese public companies. Contrary to extant research suggesting that control concentration monotonically enlarges the agency problem and, eventually, audit fees, findings suggest such a relationship depends on the nature of control. It is interesting to find that the voting rights level of state CS is significantly negatively related to audit fee; whereas that of non-state counterparts is significantly opposite. This supports the view that auditors are likely to recognise incentive alignment as the dominant effect introduced by state control and entrenchment effect as the threat brought by non-state control. Furthermore, evidence suggests that auditors tend to perceive two-right divergence for non-state CSs as intentional and a risk indicator; but see that for state CSs as the expanding of control chain, which wears away the risk mitigation effects. To some extent, this thesis illustrates that control concentration, *per se*, does not necessarily impair corporate

governance; rather this impairment is caused by CSs' unethical incentive and excessively large control without bonded ownership.

Moreover, using a proprietary dataset of hedge fund activists together with 2002-2014 SEC 13D(/A) filings in US markets, this study next examines the impact of hedge fund activism (HFA) on risk perception of auditors, proxied by audit fee. It proposes that there should be a 'learning curve' for stakeholders to recognise long-term corporate governance benefits brought by this new wave of shareholder activism. Consistent with expectations, results show that, relative to those of matched controls, audit fee for HFA-targeted companies exhibits no differences pre-intervention; however, these differences emerge and increase significantly in the first three post-intervention audit engagements, followed by a fall back to the fifth post-event year. Furthermore, findings suggest that the post-intervention fee drop is negatively associated with the auditor-HFA experiences/encounters. Findings also suggest that these audit fee dynamics do not result from indirect effects caused by changes of firm's fundamentals. Taken together, the results suggest that policymakers should not be urged to tighten regulations on HFA but instead should allow more time for this new breed of activist blockholder to be understood.

Once the intangible perception gap between third party and presence of blockholders was addressed, in the final empirical analysis, this research further investigates tangible impacts of HFA on portfolio companies' choice between real activity (REM) and accrual-based earning management (AEM) techniques as a result of their influences on the strategic aspect of corporate governance. Specifically, results suggest that target firms' REMs via reducing/postponing R&D and SG&A expenses declined significantly during HFAs' holding period; as well as after shares being withdrawn. This not only indicates that HFAs suppressed managers' intention to deliver earnings at the cost of long-term performance; but also that such beneficial influences persisted in the short- and long-term periods after HFA's disposal of shares. On the AEM side, the study reveals a significant increase in AEM after HFA intervention. This supports the expectation that targeted companies reallocate reduced earnings to AEM as a result of HFAs' demand for balancing stakes among stakeholders and earnings-smoothing. Overall, these findings support the previous view that HFA serves as a remedy for extant corporate governance.

Table of Contents

List of Tables

List of Figures

Declaration of Authorship

I, ... Su Wang

declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

Blockholders and Corporate Governance .....

.....

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission.

Signed: Su Wang .....

Date: 20/04/2018 .....

To them –

for all the reasons they know so well.

Acknowledgements

Foremost, I am highly grateful to my supervisors, Dr Pingli Li and Dr Qingjing Zhang, for their dedication, scholarly support, and encouragement throughout all phases of my PhD study, which helped me overcome many dark moments. Without their invaluable guidance, I would not have completed this thesis for sure. My deep gratitude also goes to Professor Jason Xiao, who agreed to serve as the external examiner, and to Dr Oliver Marnet for serving as the internal examiner. I would also like to express my thanks to all PhD students at Southampton Business School, especially Cong Huang, Huan Bian, Nairui Dong, Di Xiao, Ou Lu and Xiangyun Lu for their friendship, discussion and encouragement. I also thank Professor Alon P. Brav for sharing the US hedge fund activist list, which is the cornerstone of the last two core chapters.

Second, I would like to express my gratitude to Professor Kevin Holland and Professor Kevin McMeeking, discussants of 2017 BAFA annual conference, for their valuable discussion.

Third, I am deeply indebted to my parents, Feihu and Yajuan, for their endless tolerance and unconditional love. Their belief in me has always been my greatest motivation to reach this moment. They dedicated their life to raise me; gave me everything they could. They are the best parents I could ever have had.

Last, but not least, I would like to thank my love for her unending patience and support no matter how bumpy this journey was and will be.

Su Wang

Southampton, UK

April 2018

Definitions and Abbreviations

Abbreviations	Definitions
SEC	Securities and Exchange Commission of US
CS	Controlling Shareholder
HFA	Hedge Fund Activist
REM	Real-activity-based Earnings Management
AEM	Accrual-based Earnings Management
SSE	Shanghai Stock Exchange
SZSE	Shenzhen Stock Exchange
SOE	State Owned Enterprise
NTR	Non-tradable Share Reform of China
WLRK	Wachtell, Lipton, Rosen & Katz Law Firm
ICOFR	Internal Control Over Financial Reporting
CSMAR	China Stock Market and Accounting Research
PCAOB	Public Company Accounting Oversight Board
CEO	Chief Executive Officer
IPO	Initial Public Offering
SCE	State-controlled Enterprise (partially privatized)
PBC	The People's Bank of China
ICBC	Industrial and Commercial Bank of China
ABC	Agriculture Bank of China
CCB	China Construction Bank
CCP	Chinese Communist Party
BOC	Bank of China
SCECG	State-controlled Enterprise affiliated with Central Government
SCELG	State-controlled Enterprise affiliated with Local Government
NS	Non-state-affiliated Enterprise
NAO	National Audit Office of China
SASACSC	State-owned Assets Supervision and Administration Commission of the State Council
NED	Non-executive Director
CG	Corporate Governance
CSRC	China Securities Regulatory Commission

HKEx	Hong Kong Stock Exchange
DAS	Domestic Accounting Standard of China
CPA	Certified Public Accountant
IFRS	International Financial Reporting Standards
HKFRS	Hong Kong Financial Reporting Standard
SFC	Securities and Futures Commission of Hong Kong
SFCO	Securities and Futures Commission Ordinance OF Hong Kong
TCI	The Children‘s Investment Fund
ACAP	Advisory Committee on the Auditing Profession
SOX	Sarbanes-Oxley Act of 2002
EDGAR	Electronic Data Gathering, Analysis, and Retrieval system of US SEC
CIK	Central Index Key of US SEC
WRDS	Wharton Research Data Services
SIC	Standard Industry Code
CRSP	Centre for Research in Security Prices
IBES	Institutional Brokers' Estimate System
GAAP	US Generally Accepted Accounting Principles
R&D	Research and Development
SG&A	Selling, General and Administrative
PSM	Propensity Score Matching
DiD	Difference-in-Differences
EM	Earnings Management

Chapter 1

Introduction

Chapter 1 Introduction

1.1 Research motivations and aims

The main purpose of this research is to provide new insights into the impact of passive and active blockholders on corporate governance, in response to the recent worldwide regulatory movements of fencing large shareholders. This has been accomplished and presented in the following three core empirical chapters, using samples from Chinese and US stock markets.

Studies show that the ownership structure around the world is much more concentrated than previously assumed (Shleifer and Vishny, 1986, Shleifer and Vishny, 1997, La Porta et al., 1999, La Porta et al., 2000, Fan and Wong, 2002, Fan and Wong, 2005, Ben Ali and Lesage, 2013). Under such a setting, the concerns of agency conflicts shift away from the conflicts between shareholders and managers (Type I) in typical Angelo-Saxon scenario[1] to the conflicts between majority and minority shareholders (Type II) (Shleifer and Vishny, 1997). This is the core justification that is deeply embedded in ongoing and prospective regulatory changes that may suggest a worrying future for blockholders global-wise. This can be illustrated by examples from the two largest economies, China and the US. In China, the non-tradable share reform aiming to reduce state blockholding that previously safeguarded by share segmentation led to unexpected outcomes. Although early empirical evidence suggests positive market reactions (Liu and Tian, 2012, Beltratti et al., 2012), more recent ones (Kuo et al., 2014, Xiao, 2015) indicates these responses could be merely results of better concealed but more harmful manipulative approaches (see section 1.2.2). In the US, a petition (Watchtell, 2011) calls for the Securities and Exchange Commission (SEC) to narrow the Scheduled 13D filing window from 10 days to 1 day after investor acquiring more than 5% of a company's equity securities (see section 1.2.3 for discussion). Under the current 10-day requirement, the filer can continue to accumulate a substantial amount of shares after crossing the 5% threshold without the market noticing by delaying the

[1] Refers to relatively diffused shareholding.

disclosure. However, if the proposed reform is passed, the market will be immediately aware of the intention of prospective blockholders; and conveniently free ride their investments, which greatly increases the cost of intervention, and, thus, effectively disincentivise formation of blockholders.

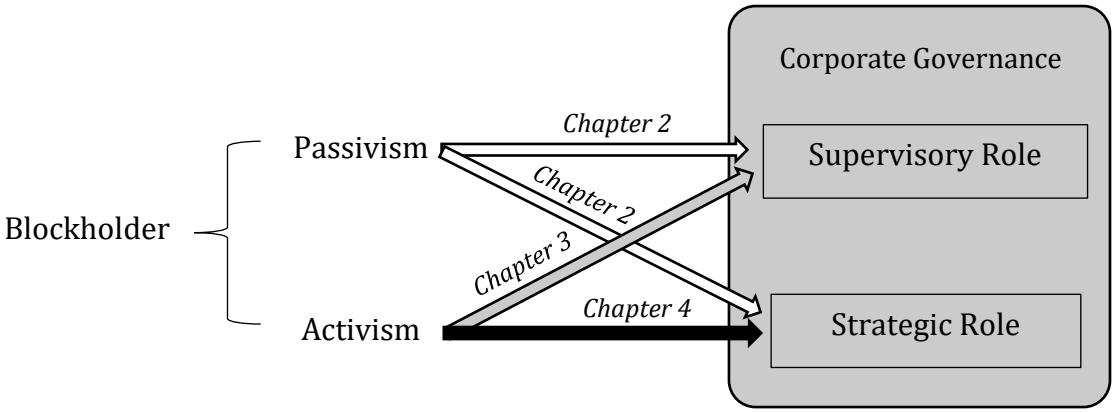
Two problems remain in the core justification/assumption of these reforms. First, despite the increase in Type II conflicts, the Type I agency conflicts between shareholders and managers are considered reduced under the concentrated ownership structure with one prevalent example being the mitigation of the free-rider problem (La Porta et al., 1999, Grossman and Hart, 1980). Therefore, without examining the net effect of blockholding, the aforementioned reforms are not really justifiable. Second, the above assumption is, arguably, highly simplified based on the belief that blockholders are homogeneous, sharing the same incentives and behaviours. This assumption is strongly contested in light of the fact that, realistically, concentration can take various forms according to blockholders' nature, activeness and profit-making approach. That is, while theories suggest that concentration may enable blockholders to expropriate minority shareholders' interests, it does not indicate that all types of blockholder will consider exercise such 'privilege' as necessary.

To this end, seeing corporate governance as the reflection of a firm's agency conflicts, this thesis challenges the 'bias' through three empirical analyses that particularly focus on disentangling interactions between corporate governance and the aforementioned problems. Figure 1.1 illustrates the general logic underpinning the framework of this thesis. Since the international trend of 'anti-blockholding' mostly stems from concerns that blockholders might *take away* minority shareholders' economic interest due to entrenched control, but largely neglects the benefits that their presence could *bring in*, to facilitate a fairer and more balanced view, it is essential to evaluate net impacts of blockholding relative to shareholding types via rigorous comparative research design. Moreover, because blockholders' activeness in achieving their goals determines their influences, it is also necessary to distinguish between passive and active types of blockholding. As a result, chapter 2 focuses on the most passive blockholder – state shareholding – in the Chinese context where such a holding type dominates[2] the stock

[2] The sample of paper 1 shows that, between 2005 and 2014, 50% of non-financial listed companies in China are effectively controlled by the state with average shareholding over 40%.

market; whereas Chapters 3 and 4 examine the most active and topical breed of blockholder – the hedge fund activist – in US markets where they originated and most developed. Research aims are presented below for each of the core chapters in turn.

Figure 1.1 Thesis framework



The primary aim of the first core chapter (Chapter 2) is to examine the relative impact of state control, the most passive blockholding type, on corporate governance in the Chinese context. The secondary objective is to investigate whether control-enhancing arrangements (primarily pyramid shareholding in this case) show different patterns of effect on agency conflicts when the nature of the controlling shareholder (CS) has been distinguished. To this end, audit is seen as a monitoring cost that depends on the extant corporate governance effectiveness (Ben Ali and Lesage, 2013), chapter 2 tests the respective and joint influences of state control, voting right concentration and the wedge between voting and cash flow rights on audit fees of Chinese listed companies between 2005 and 2014.

While much academic research has examined the relationship between shareholding type and audit fee with a primary focus on managerial, institutional and foreign shareholding, less research has focused on state ownership (Niemi, 2005, Ben Ali and Lesage, 2013). For instance, although Niemi (2005) finds state-owned companies are not different from others regarding audit hours and fees in Finland, his findings are derived from a small and selective sample (81 companies; and all audited by BigN) and low state presence (7%), which is hardly representative. Similarly, despite the asserted high government ownership of France relative to other continental European as well

as Anglo-Saxon countries, Ben Ali and Lesage (2013) only identified 6.1% firms within their sample as state controlled. Moreover, after meta-analysing 25 years of audit pricing studies, Hay et al. (2006) summarise that the state ownership is still a potential fee determinant while short of conclusive evidence. Considering the implications embedded in the long-lasting criticism of state control inefficiency (i.e. Shleifer and Vishny, 1986, Shleifer and Vishny, 1997, Fan et al., 2007, Lin, 2013 etc.), it is both interesting and important to investigate the perceptions of audit professionals on such issues. In addition, despite studies (Fan and Wong, 2005, Fan and Wong, 2002, Claessens et al., 2002) that provide evidence on conflicts between the CS and minority shareholders (Type II agency problem) in Asia markets, these studies implicitly assume the same control incentives among different CS types. No attention has been paid to the joint effects of the CS's nature, the level of control, and the wedge between voting and cash flow right.

Focusing on one of the most active and topical types of blockholder, the hedge fund activist (HFA), the second core chapter (Chapter 3) examines, in US markets, auditors' perceptions (proxied by audit fee) over future corporate governance changes promoted by HFA and the dynamics of such perceptions following HFA's involvement in corporate operations at the post-intervention stage.

HFA has spiked almost hyperbolically during the last decade due to context changes such as the sharp decline of staggered boards, the rising power of proxy advisors and new tactics to defeat corporate defences (see Coffee Jr and Palia, 2016 for detailed discussion). Although recent studies conclude that HFA successfully promotes short- and long-term improvements in the target firm's corporate governance, business policies, innovation, and financial performance (Brav et al., 2008b, Brav et al., 2009, Klein and Zur, 2009, Boyson and Mooradian, 2011, Cheng et al., 2012, Bebchuk et al., 2015, Brav et al., 2016b), their gap between negative public attention remains unexplained. In addition, to the best of author's knowledge, no study has examined the relationship between HFA intervention and audit pricing. Moreover, the petitioners calling for Scheduled 13D reform explicitly use HFA as their justification (Watchtell, 2011), which makes the need for new evidence rather important for policymakers.

Finally, since chapter 3 bridged the intangible perception gap between third party and HFA intervention, in the third core chapter (Chapter 4), the study further investigates

tangible impacts of HFA on portfolio companies' choice between real activity (REM) and accrual-based earnings management (AEM) techniques as a result of their influences on strategic aspect of corporate governance.

Extant studies revealed the distinctive, meanwhile, supplementary relationship between REM and AEM. However, despite recent studies showing that HFA can be deemed as an extreme form of investor activism in terms of promoting long-term improvements in a portfolio firm's corporate governance (Brav et al., 2008b, Klein and Zur, 2009, Boyson and Mooradian, 2011), again, to the best of author's knowledge, no study has explored HFA's effect on this important strategic decision of earnings reporting. For the same reason as chapter 3, it is a potentially crucial area that has to be understood before any regulatory changes should be warrantied.

1.2 Background

1.2.1 Agency conflicts, ownership structure and corporate governance

The agency conflicts stem from the separation of ownership and control (Jensen and Meckling, 1976, Fama and Jensen, 1983a, Fama and Jensen, 1983b). Fundamentally, they are collective reflections of divergent objectives and information asymmetry between principle (shareholders) and agent (manager) (i.e. Type I agency conflicts); or between majority and minority shareholders (i.e. Type II agency conflicts). Contracts are not always sufficient to solve these conflicting interests (Hart, 1995). Thus, to align these conflicts, it is crucial to establish mechanisms, namely corporate governance, to monitor and guide managerial activities (Jensen and Meckling, 1976, Financial Reporting Council, 2016, Shleifer and Vishny, 1997). Therefore, practically, the implementation of good practice for corporate governance is important not only to investors during decision-making (Lasfer, 2002, Klapper and Love, 2004, Durnev and Kim, 2005) but also to policymakers when assessing whether regulative remedies are necessary.

When taking a step back, it is rather clear that the ownership structure is the cornerstone of corporate governance since it determines the nature of governance issues that a specific corporate governance setting is implemented to address (Bebchuk and Hamdani, 2009). In the case of widely-held firms, the most notable agency problem lies in the interest misalignment between shareholders and managers (Jensen and Meckling, 1976), which leads to managerial misconduct such as self-dealing transactions, excessive remuneration, and suboptimal operational decisions. Although a healthy and functional set of corporate governance mechanisms should generate aggregated effects aligning their interests, the dispersed nature of this structure tends to hinder such effective setting established in the first place due to factors such as associated costs and the free-rider problem (Grossman and Hart, 1980). At the other end of the spectrum, when corporate ownership was highly concentrated, the agency problem shifts to the conflicts of interests between controlling and minority shareholders. Specifically, under this circumstance, monitoring cost and the free-rider problem are no longer limiting factors for shareholders to monitor management

effectively. However, entrenched CSs now garner the ability to expropriate minority shareholders, which can be even further magnified by control-enhancing arrangements, such as the wedge between voting and cash flow rights (Claessens et al., 2002, Fan and Wong, 2005, Fan et al., 2007).

Taken together, the above discussion leads to the core premise of this thesis that the potential of expropriation is inherently embedded in both types of ownership structure with the only difference being the identity of the expropriator. Therefore, corporate governance effectiveness varies from one company to another depending on how well it is designed to address (or how resistant it is to) those potentials. In practice, it could be particularly important for rule-makers to maintain a balanced view of dispersed and concentrated ownership.

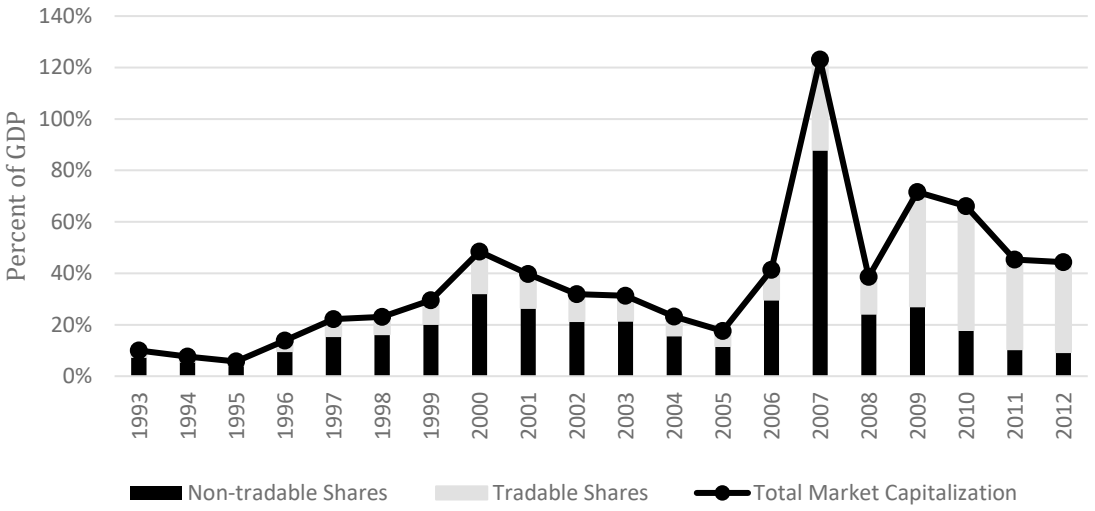
1.2.2 Uncompleted non-tradable share reform in China

In 1990, mainland China established two stock markets – Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE). The creation of the two stock markets[3] was a remarkable achievement of Chinese economic reform (Naughton, 2007). During the two decades of development, the total market capitalisation kept fluctuating rather than steady increasing like what the Chinese GDP pattern is shown (see Figure 1.2). Nevertheless, by the end of 2010, the capitalisation of SSE and SZSE still have reached 2,716 and 1,311 billion USD, ranking 6th and 14th among 57 world major stock markets (WFE, 2010). However, Naughton (2007) points out that instead of creating a financing channel, the establishment of stock markets should be seen as a subordination of Chinese SOEs reform (Naughton, 2007). In other words, although there are a large number of private companies issuing shares in the two markets, considering state-controlled (including direct and indirect) firms account for majority listed firms, they

[3] Both stock exchanges were regulated by People's Bank. Then, since 1997, a specialized executive agency of the State Council, China Securities Regulatory Commission (CSRC) took over the supervisory role. In 1999, the newly established People's Republic of China Securities Law (PRCSL) gave CSRC authorities to: 1) draft security market strategy, plan and code; 2) regulate Chinese security market participants, including security exchanges, listed firms and brokerages; 3) examine and approve listing applications; 4) company with other authorities to regulate, examine and approve market intermediaries, including accounting firms, law firms and asset evaluation institutions. Therefore, the CSRC has not only a very wide administrative power, but also some extent of legislative authority.

are more like two platforms that allow SOEs to be partially privatised and, meanwhile, state's control to be levered.

Figure 1.2 Percent of market capitalisation in GDP and share segmentations in China (SSE & SZSE)



Note:
The dramatic surge in 2007 was mainly due to the global financial crisis. Using Chinese market as a safe heaven,tremendous amount of foreign capital flooded into Chinese stock market, which pushed the total capitalization to a historical high point.
Data Source: *China Statistical Yearbook Series (various years, 1997 - 2014),* National Bureau of Statistic of the PRC

To maintain control of the state, the shareholding of listed SOEs was divided into 'Tradable Shares' and 'Non-tradable Shares' – two segmentations (Kuo et al., 2014). The former is capitalised equities that tradable on the open market. Whereas the latter refers to those shares[4] that cannot be traded publicly, which guarantees the ultimate control remains in the hands of the state. This two-tire share segmentation allegedly enlarged Type II agency conflicts and, in turn, jeopardise firms' profitability and corporate governance effectiveness (Xie et al., 2016, Kuo et al., 2014, Xiao, 2015). To address these speculations and rebuild investors' confidence, since April 2005, the China Securities Regulatory Commission (CSRC) initiated the non-tradable share

[4] Including state-owned shares and legal person shares (Chen et al., 2009). 'State-owned shares' were generated during the SOE restructuring process, representing the state's initial investment. In SOEs, 'Legal person shares' are typically held by state-controlled corporations or other government authorized institutions (Chow et al., 1995 p72).

reform (NTR) with the aim of converting all non-tradable shares that were safeguarding state-blockholding to tradable shares (Xiao, 2015). The bar section of Figure 1.2 shows the significant *quantitative* achievement so far of ongoing NTR.

However, for such a 'correct' movement with sound initiative appeal, the *quality* of its effects on corporate governance remains questionable. Although Liu and Tian (2012) asserted CS tunnelling (proxied by inter-corporate loans and CAR after the disclosure of related party transaction) has been greatly reduced after NTR; and Beltratti et al. (2012) documented positive market reactions following NTR; Kuo et al. (2014) found firms tend to shift accrual-based earnings management (AEM) to less detectable activity-based approach (REM) post-NTR, which may explain the positive market reaction of aforementioned studies. Later, Xiao (2015) concluded the NTR, in fact, exacerbate earnings manipulation since the newly liberalised shares encourage blockholders to maximise the gain from markets.

These mixed results raise a question – if the NTR did not improve corporate governance, could state control be actually a wrong target in the first place? Alternatively, should it be the sole suspect? There are hints from extant studies. Chen et al. (2009) conclude that in a transitional economy with a weak legal environment, state ownership has its advantage in enhancing corporate governance. Similarly, Kuo et al. (2014) also interpret the post-NTR REM boost as a result of weak investor protection. Therefore, it is more plausible that a sound corporate governance only exists when both legal environment and share liberalisation are adequately achieved. If the former was weak, the latter might still be a necessity. Otherwise, take the case of NTR as an example, blindly reduce state blockholding merely led to a better concealed, meanwhile, probably more harmful[5] 'side-effect'.

To this end, although this thesis does not specifically explore issues related to NTR, chapter 2 provides empirical evidence of (auditors' perceived) benefits brought by state control.

5 Prior studies, such as Zang (2012), document that REM is more harmful for firms' future value and performance since REM usually involves utilising suboptimal operational activities at the cost of long-term performance; while AEM generally will not attract any long-term penalty,

1.2.3 Petition of Scheduled 13D reform in the U.S.

On 7th March 2001, a New York-based law firm (Wachtell, Lipton, Rosen & Katz, hereafter WLRK) that is known for promoting SEC (U.S. Securities and Exchange Commission) changes submitted a petition to shrink the reporting window of Scheduled 13D from ten days to one day (Watchtell, 2011). In addition, WLRK proposes that no further share purchasing should be allowed two days after the filing (cross 5% threshold). The Security Exchange Act[6] requires investors acquire more than 5% of a voting class of a company's equity securities to fill the Scheduled 13D firm within ten days after the purchase[7]. WLRK's major concern[8] is that the original 10-day window allows prospective active blockholders to (hide their intentions and) conduct market manipulation and abusive tactics, which only benefit their short-term goals and compromise market transparency as well as investor confidence.

Despite the fact that petitioners did not explicitly label blockholding as the 'sin', the proposed changes would disincentive the formation of blockholders since the investing public could conveniently, and in a timely fashion, free-ride the 13D filers' investments in undervalued companies before the intervention is completed, which, in turn, would hugely inflate the acquisition cost (Bebchuk and Jackson, 2011). As discussed, blockholding could improve corporate governance effectiveness due to largely eliminated inhibiting factors, which benefits not only blockholders themselves but also minorities. With the increase of costs that cannot be covered by the future return, these benefits brought by blockholding would be diminished to a considerable extent. However, from another perspective, it is certainly not a game without winners, as pointed out by Bebchuk and Jackson (2011, p. 53),

[6] Rules regarding Scheduled 13D were first proposed by Senator Harrison A. Williams in 1965; and later been accepted in 1968 as amendments to the Security Exchange Act of 1934. Therefore, they are also often referred to as the Williams Act. The initial disclosure threshold and window was 10% and ten-days, which, then, have been changed to 5% and ten-days in 1970.

[7] see https://www.sec.gov/fast-answers/answersshed13htm.html

[8] WLRK's arguments include: (1) the original goal of 13D is to alert investors to the potential change of corporate control, so improved timeliness will better serve this purpose. (2) prospective blockholders silently acquire the company at a 'discount' during the 10-day window, which is 'unfair'; (3) technology improved so a short window is technologically possible.

> '…while it is far from clear that shareholders would obtain any net benefits from tightening these rules, what is clear is that such tightening would significantly benefit incumbent directors and executives - especially those at underperforming companies. Underperforming incumbents have much to gain from increased insulation from outside blockholders' monitoring and engagement and therefore would benefit from changes in rules that would provide disincentives for the emergence of significant, active outside blockholders.'

Therefore, SEC should consider further evidence regarding the benefits of blockholders' presence and activities in public companies; and to other stakeholders. To this end, this thesis provides new insights in several ways summarised in the next section.

1.3 Research contributions

This thesis contributes to the extant literature on blockholding, corporate governance and audit pricing in a number of ways.

The first contribution is comprehensive tests of the individual and joint impacts of three attributes of CSs– types, the level of control, and control-ownership wedge – on audit pricing of public companies in the Chinese stock market. Contrary to extant research suggesting that control concentration monotonically enlarges the agency problem and, eventually, audit fees (Fan and Wong, 2005), findings in chapter 2 suggest such a relationship depends on the nature of control. Specifically, the audit fee is the lowest for central State-controlled enterprises (SCEs) followed by local SCEs, which matches the expectation that the incentive effect is positively associated with state representatives' political stake. It is interesting to find that the voting rights level of the state CSs is significantly negatively related to audit fee; whereas that of the non-state counterparts is significantly opposite. This supports the assertion that auditors are likely to recognise incentive alignment as the dominant effect introduced by state control, and the entrenchment effect as the threat posed by non-state control.

The second contribution of this research is that the empirical results imply that auditors tend to perceive two-right divergence for non-state CSs as intentional and a risk indicator; but see that in the case of state CSs, as the control chain stretches, the risk mitigation effects are diminished. These results imply that auditors appreciate the influences brought by state control despite it being long criticised for its low efficiency in terms of economic outcome maximisation. To some extent, the thesis illustrates that control concentration, *per se*, does not necessarily impair corporate governance; rather CSs' unethical incentive (proxied by natures of the CS) and excessively large control without bonded ownership do.

Third, to the best of author's knowledge, this research is the first to illustrate the dynamics between HFA intervention and audit fees, which contributes to the auditing literature on the influence of ownership structure on audit pricing. Specifically, findings suggest that, in the US markets, prior to HFA intervention, target firms exhibit no significant differences from the control firms in terms of audit charge, whereas

target firms pay significantly higher fees for the year of engagement; but less for the first through the fifth post-intervention audit engagements. In addition, results show that audit fee follows a reverse U- shaped pattern across post-event years. Moreover, findings also indicate that the drop in fee within event window [+2, +5] (event Year0 being the fiscal year the intervention took place) can be explained by auditor-HFA relationship/experiences. Taken together, these results are in accordance with the expectation that auditors' risk perception towards HFA follows a 'learning curve'.

Fourth, this thesis deepens our understanding of the effects of HFA intervention through a transitional view. Specifically, on the one hand, chapter 3 illustrates that even highly sophisticated market practitioners as auditors may experience a learning curve towards the new burst of HFA due to initial concerns originating from the unknown. On the other hand, the study proves that, over time, the initially perceived uncertainty does ease as understanding increases, which supplements and supports extant HFA literature. Fundamentally, findings provide a possible explanation for the gap between the negative public reaction and positive empirical evidence towards HFA intervention, which helps to answer the practical question of whether HFA warrants any legislative/regulative response (Brav et al., 2008b) from another fresh angle. Based on findings, the author calls for a more cautious response to regulatory proposals.

Fifth, this study is the first to illustrate the effect of HFA on earnings management strategies; and provides support for the dynamic relation between REM and AEM (Zang, 2012, Cohen and Zarowin, 2010) in the context of HFA intervention. Chapter 4 provides new evidence that supports prior views that HFA offers remedies for the target firm's decision-making and corporate governance in the long run. This, in turn, supports the view that HFA should not be constrained by further legislative/regulative changes as suggested by petitioners. In particular, contrary to prior research which concludes that active shareholders equally suppress REM and AEM, chapter 4 found that, instead, HFAs, in fact, reallocate portfolio companies' earnings management placement. Specifically, using 2002-2016 quarterly fiscal data, propensity score-matched pairs and difference-in-differences design, the study found REMs via reducing/postponing R&D and SG&A expenses significantly negatively related to HFA intervention in the phase during HFA involvement in the portfolio company; and in the short-term and long-term phases that HFA exited. This indicates that HFAs not only suppressed managers' intention to deliver earnings at the cost of long-term

performance but also that such beneficial influences persisted in the short and long time periods after HFA's disposal of shares. On the AEM side, results show a significant increase in the phase when HFA is present in the firm relative to the pre-event period. This also matches the expectation that targeted companies reallocate reduced earnings to AEM as a result of HFAs' demand for balancing stakes among stakeholders; and earnings-smoothing.

1.4 Structure of the thesis

The remainder of the thesis continues as follows. Chapters 2, 3 and 4 present the three core empirical chapters mentioned above, which focus on the following topics: controlling shareholder and audit fee: evidence from China (Chapter 2); stakeholders' learning curve of hedge fund activism: evidence from audit pricing (Chapter 3); and finally, hedge fund activist intervention and earnings management reallocation (Chapter 4). Each core chapter includes abstract, introduction, hypotheses development, sample construction, results discussion and concluding remarks sections. Chapter 5 is the final chapter and summarises the key findings by practical implications. It highlights the contributions and limitations of the thesis and gives suggestions for future research.

Chapter 2

Controlling Shareholder and Audit Fee: Evidence from China

Chapter 2 Controlling Shareholder and Audit Fee: Evidence from China

Abstract

This chapter examines the individual and joint impacts of the controlling shareholder's (CS) three attributes – types, the level of control and control-ownership wedge – on audit pricing of Chinese public companies. Contrary to extant research suggesting that control concentration monotonically enlarges the agency problem and, eventually, audit fees, findings suggest such a relationship depends on the nature of control. It is interesting to find that the voting rights level of state CS is significantly negatively related to audit fee; whereas that of non-state counterparts is significantly opposite. This supports the view that auditors are likely to recognise incentive alignment as the dominant effect introduced by state control, and entrenchment effect as the threat posed by non-state control. Furthermore, empirical evidence suggests that auditors tend to perceive two-right divergence for non-state CSs as intentional and a risk indicator; but see that for state CSs as the expanding of control chain, which wears away the risk mitigation effects. To some extent, this study illustrates that control concentration, *per se*, does not necessarily impair corporate governance; rather this impairment is caused by CSs' unethical incentive and excessively large control without bonded ownership.

Keywords: *Audit pricing; Control incentive; State ownership; Controlling shareholder*

2.1 Introduction

The determinants of audit fee have been the subject of growing interest for decades ever since Simunic (1980) proposed the seminal economic model. A large number of empirical studies have looked for auditee side drivers including board composition (Beasley, 1996, O'Sullivan, 2000, Goh, 2009), audit committee quality (Beasley et al., 1999, Krishnan, 2005, Zhang et al., 2007), internal audit quality (Schneider, 1985, Felix et al., 2001) and managerial integrity (Cohen and Hanno, 2000), among others. While these studies revealed insightful evidence in the context of western markets, what remains relatively under-researched is whether audit fee is driven differently in emerging economies where institutional settings are significantly different. Thus, to extend this stream of research, this chapter examines the respective and joint influences of state control, voting right concentration and the wedge between voting and cash flow rights on audit fees using Chinese data, aiming to extend our knowledge of the effects of state and non-state-affiliated controlling shareholders (CSs) on risks perceived by auditors, as proxied by audit fee.

This chapter focusses on the relations between the attributes of CS and audit fee in China. This study is motivated by two gaps in the literature. First, extant research examining the relationship between shareholding type and audit fee primarily focusses on managerial, institutional and foreign shareholding types, with state ownership generally omitted. Although Niemi (2005) finds state-owned companies are not different from others in terms of audit hours and fees in Finland, his findings are derived from a small and selective sample (81 companies; and all audited by BigN) and low state appearance (7%), which is hardly representative. Similarly, despite the asserted high government ownership of France relative to other continental European as well as Anglo-Saxon countries, Ben Ali and Lesage (2013) only identified 6.1% firms within their sample as state controlled. Considering the implications embedded in the long-lasting criticism of state control inefficiency (i.e. Shleifer and Vishny, 1986, Shleifer and Vishny, 1997, Fan et al., 2007, Lin, 2013 etc.), it is both interesting and important to investigate the perceptions of audit professionals on such issues. The second motive of this chapter is related to the incentive effects of CS. Previous studies discovered a negative correlation between blockholding and audit fee in markets characterised by concentrated (i.e. Fan and Wong, 2005) and diffused ownership (i.e.

O'Sullivan, 2000). Consistently, the studies on ownership concentration provide evidence on conflicts between CS and minority shareholders (second-type agency problem) in Asia markets, and suggest that CSs' entrenched control may provide them with the ability to conduct unchallenged self-dealing (referred to as the entrenchment effect), and such effect would be magnified when CSs' voting rights excessively exceed their cash flow rights (e.g., Fan and Wong (2002); Claessens et al. (2002); Fan and Wong (2005)). Those studies implicitly assume the same control incentives among different CS types, and no attention has been paid to the joint effects of the proposed three attributes of CS, namely the types, the level of control, and the wedge between voting and cash flow right.

Traditionally, there are three possible incentive-driven effects from a CS behaviour (Claessens et al., 2002, Fan and Wong, 2005). First, CSs' entrenched control may afford them the ability to conduct unchallenged self-dealing (referred to as the entrenchment effect) which indicates a higher control and litigation risk to the auditor. Second, such an entrenchment effect would be magnified when CSs' voting rights excessively exceed their cash flow rights (referred to as the two-right wedge), because they could exploit minority shareholders at a relatively small cost thereby suggesting an even higher risk exposure of audit failure. Third, however, a higher ownership stake could also give CSs both the ability and incentive to improve corporate governance (referred to as the incentive alignment effect), which, in turn, reduces audit risk. Although there is empirical evidence to indicate that, in Asia markets, auditors tend to recognize CS as a threat to 'entrenchment problem' rather than a mitigator of agency conflict (Fan and Wong, 2005), this study argues that the institutional setting of China makes prior established correlation questionable because of the unique way that state CS affects the company, and that CSs' influences on audit fee could be jointly determined by the attributes of CS – the type, the level of control, and the wedge between voting and cash flow rights.

Since the single largest shareholder who has obtained effective control usually has unchallenged influences on the board (Hou et al., 2015), their incentive directs both the supervisory and strategic functions of corporate governance, which determine the auditor's perceived audit risk and planned audit effort (Cohen et al., 2007); and thus audit fees. This chapter suggests, relative to non-state-affiliated CSs, state CSs tend to emphasise more on strengthening internal control over financial reporting (ICOFR),

which leads to lower risk from an audit perspective. Because from the individual's perspective, state CS representatives have no cash flow rights, they thus do not bear the associated monitoring costs themselves (Niemi, 2005) (Type II agency cost) but have to suffer reputational and political rent-seeking ability loss whenever a manager's fraudulent activities are exposed (Hung et al., 2015). For the same reason, the strategic aspect of companies ultimately controlled by government tends to be risk-averse (Chen et al., 2010) in daily operations, which eventually mitigates audit risks. These perceptible audit risk reductions would drive both planned amounts of audit effort and audit fee downwards, but to varying extents among different types of state CS.

The second argument is related to external preferential treatments brought by state control. In particular, as prior studies suggest, Chinese state banks tend to discriminate against non-state-controlled companies; and give preferential treatment to state-controlled ones (SCEs) via differentiating the cost of credit, loan standard and amount of financing due to banks' incentive to maintain good relationships with government (Brandt and Li, 2003, Fan et al., 2008, Wang, 2015). Similarly, when SCEs face financial difficulty, the government is likely to back them by providing government bailout to avoid civil unrest caused by worker layoff (Faccio et al., 2006, Wang et al., 2008, Hung et al., 2015). As a result, these preferential treatments towards SCEs would directly lower their likelihood of being in business failure, thus, decreasing the auditor's *de facto* litigation risk expectation and consequently audit fees.

The Chinese market provides an opportune test ground for the research question. State control, voting right concentration and the wedge between voting and cash flow rights exist widely in China. Specifically, according to the China Stock Market and Accounting Research (CSMAR) database, by the end of 2014[9], approximately 50% of listed companies were ultimately controlled by the government or government-affiliated agencies. On average, 40% voting rights are held by the CS; and the mean cash flow to voting right ratio is 0.83, which is even more extreme than in other Asian markets documented by Fan and Wong (2002). The setting of the Chinese stock market allows the study to investigate the audit fee determinants in an institutional context different from those in western markets. The single country setting also enables this study to

9 The following figures are estimated using the same classification method as the one used in the present chapter.

focus on the specific set of institutional factors while holding constant other effects of country-level institutional infrastructure that might be correlated with audit pricing.

This chapter uses data of Chinese non-financial listed firms from 2004 to 2014 and examines the effects of three attributes of CS on audit fee. The study first tests the effect of CS type on audit fees to examine whether the proposed different audit fee reduction effects exist. Chapter 2 then examines whether the strength of CSs' control, proxied by the percentage of voting rights held by the largest CS, contributes to audit fee differentiations brought by different types of CS. Since widely existing cross-shareholding in China creates divergences between CSs' voting and cash flow rights, this study further tests whether such a two-right wedge, along with the type of CS, contributes to the risk perception variation of auditors and, thus, audit fee.

Empirical evidence yield is broadly consistent with predictions. Findings first indicate lower audit fee related to state CSs – the lowest for those affiliated with central government, compared with non-state-affiliated CSs. Further, results on the relationships between the tightness of control, the two-right wedge and audit fee are directionally different between state and non-state CSs, which further confirms the argument that the auditor's perception of the CS's incentive effects is affected by the type of CS involved.

Results of this chapter contribute to the understanding of the impact of the CS on auditor's risk perception and eventually audit price. Findings uncover the effects of CS on audit fee by considering the varied incentives of different CSs. More specifically, the study examines the effects of different types of state CS, such as state CS affiliated with central or local government, within the Chinese institutional environment. Findings support the incentive and preferential treatment arguments that auditors tend to perceive the involvement of state as a risk mitigation indicator. Further, empirical evidence on the effect of the wedge indicates that controlling shareholders obtaining further control without corresponding ownership would increase perceivable audit risk regardless of their nature and the tightness of control. This study extends the literature on control concentration of Asian markets (Fan and Wong, 2002, Claessens et al., 2002, Fan and Wong, 2005) by presenting different insights from the underlying assumption that two-right divergence is the result of intentional arrangements for all the companies. These findings have policy implications. It is important for

policymakers and regulators to understand that the control concentration itself does not necessarily impair corporate governance, financial reporting or minority shareholder's interests (prospective) in the same ways that dominant shareholder's unethical incentive and excessively large control without bonded ownership do. Blindly restricting the formation of the blockholder without considering the potential benefits brought by legitimate acquisition will not benefit market participants.

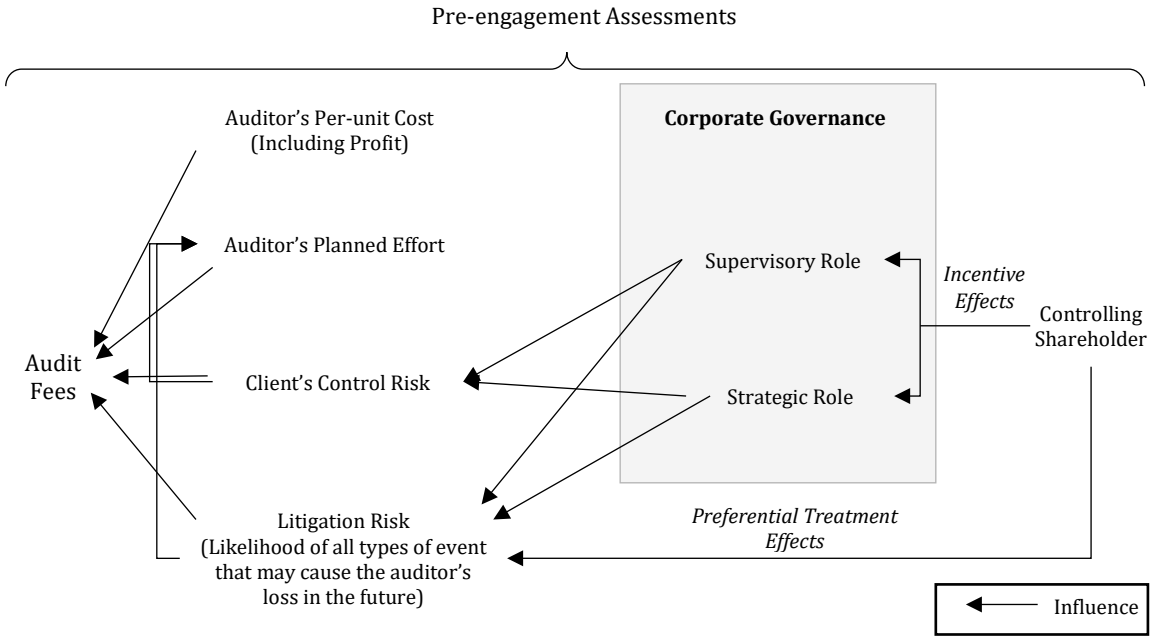
This study also contributes to the literature on the role of different corporate governance mechanisms, such as state control, internal audit committee, and board independence; and has policy implications for corporate governance reforms, particularly in emerging markets. Results support Cohen et al. (2002), Fiolleau et al. (2013) and Dhaliwal et al. (2015) by finding that auditors do recognize the *de facto* top management, in this case controlling shareholder, as the determinant force of corporate governance, whereas other mechanisms such as the audit committee that has been controlled for in tests show insignificant correlations with audit fee, suggesting that auditors may consider them to be merely symbolic and less important. This implies that a study of relationships between corporate governance features and external audit issues without taking control characteristics into consideration could be reality-detached. Finally, although state ownership has long been criticised as hindering effective corporate governance in terms of economic outcome maximisation (Shleifer and Vishny, 1997), results suggest it can still be perceived as positive, at least, as far as the auditors are concerned. This indicates, realistically, that there could be no 'universal value' to judge corporate governance, as most literature implied. Rather, this depends on the observer's viewpoint.

The remainder of this chapter proceeds as follows. Section 2.2 discusses related literature and develop hypotheses. Section 2.3 describes the research design. Empirical analyses are provided in Section 2.4 and Section 2.5 offer robustness tests. Section 2.6 presents additional tests. Concluding remarks of this chapter are presented in the final section.

2.2 Literature review and hypotheses development

The control (voting rights) of listed companies in China is typically concentrated in the hands of large shareholders, among which different levels of state capital management agencies account for half. This study argues that the single largest shareholder, controlling shareholder (CS), affects audit fee indirectly through the tone he/she sets on supervisory and strategic aspects of corporate governance; and directly through the preferential treatments brought by him/her. This section first discusses Simunic (1980) audit fee model, which reflects the auditor's concerns during pricing. It then identifies the links between CS attributes and those concerns (see Figure 2.1). Finally, hypotheses pertaining to the relations between CS type, voting right concentration, two-right wedge and audit fee are developed.

Figure 2.1 Effects of controlling shareholder on audit fee



2.2.1 Audit pricing model

Simunic (1980) developed a seminal model identifying determinants of an auditor's pricing strategy for given engagement in a competitive market.

$$E(C) = cq + E(d \mid a, q) \times E(\theta) \tag{2.1}$$

where,

E(C) = total expected costs of target engagement or, that is, audit fee

c = the per-unit factor cost of external audit resources to the auditor, including all opportunity costs and therefore a provision for a normal profit.

q = the quantity of resource utilised by the auditor in performing the audit examination.

E(d) = the expected present value of possible future losses which may arise from this period's audited financial statements.

a = the quantity of resource utilised directly by the auditee in operating the internal accounting system.

E(ɵ) = expected possibility and proportion[10] of loss borne by the auditor for auditing this period's financial statements.

Assuming that auditors are constrained to provide a minimal level of assurance required by law[11], they are expected to price a prospective engagement by performing following procedures: (1) assess auditee's internal control effectiveness, *a*, a particular focus on internal controls over financial reporting (ICOFR); (2) evaluate the likelihood and proportion[12] of being held responsible for future loss *E(ɵ)* according to inherent and control risk assessments; (3) based on client's existing level of *a*, adjust audit input plan[13], *q*, to the point where one unit reduction of *E(d) × E(ɵ)* is equal to the marginal cost of that amount of *q*; and (4) set an audit fee, *E(C)*, which can cover the cost of

10 Assuming auditor and auditee jointly responsible for liability.

11 Contrary to investor's and many other audit quality researchers' belief that the quality of audit is a continuous measurement. Audit professionals see the audit quality that needs to be achieved primarily in terms of compliance with professional auditing standards (Christensen et al. 2016), which suggests, for the issue of audit pricing, that the assumption based on such dichotomy is more appropriate for this chapter (supply perspective).

12 Control risk.

13 Such as the number of auditor and/or the amount of substantive tests involved according to the desirable level of detection risk determined in the planning stage.

planned audit input/effort including profit, *cq*, plus the expected present value of possible losses *E(d) × E(ɵ)*.

Therefore, this model indicates that audit fee is a reflection of the auditor's perceived audit risk[14] at the pre-engagement stage, which is ultimately determined by the auditee's control risk, *a*, and the auditor's expectation of future loss, *E(d) × E(ɵ)*[15][16]. Moreover, risks of material misstatement and, eventually, auditor resource input, *q*, might also be affected by the size and complexity of the company[17] (PCAOB, 2010). For example, a larger client naturally requires more labour input; or cross-listed companies subjected to different statutory financial reporting requirements usually require collaboration between offices (Bronson et al., 2017). Finally, since in the case of any negative consequences related to auditing quality occur, stakeholders generally attempt to recover loss from auditors through legal action, in this chapter, for ease of discussion, auditor's expected future loss, *E(d) × E(ɵ)*, is generalized as 'litigation risk' (Pratt and Stice, 1994, Seetharaman et al., 2002, Choi et al., 2008b). To sum up, equation (2.1) can be simplified as,

$$\begin{aligned} Audit\ Fee\ =\ f\ (&Auditee?s\ Complexity\ +\ Auditor?s\ Per-Unit\ Cost \\ &+\ Auditee?s\ Control\ Risk\ +\ Litigation\ Risk) \end{aligned} \tag{2.2}$$

2.2.2 CS's incentive effects

Financial Reporting Council (2016) documents that corporate governance serves both strategic and supervisory roles, which suggests a good practice should include setting

14 Public Company Accounting Oversight Board [PCAOB] 2010 – 'AS1101: Audit Risk' defines audit risk as 'a function of the risk of material misstatement and detection risk.'

15 This product denotes proportional present value of all types of internal and external residual risks that cannot be effectively eliminated by auditing, which include but are not limited to litigations against auditor as results of some inherent risks, industrial-wise crisis, business failure etc.

16 The link between audit risk and effort embedded in Simunic's (1980) model consistent with AS1101, AS2110 and AS2301 of PCAOB (2010) suggesting that the auditor should adjust the nature, timing and extent of the substantive procedures in response to high risks of material misstatement. Although the above standards prescribe activities AFTER clients' acceptance/retention stage, the link should still be applicable here.

17 There are two types of effect on audit effort. On the one hand, size and complexity affect detection risks, thus indirectly affect effort. On the other hand, the nature, timing and extent of procedures to obtain an understanding of internal control directly depend on auditee's size and complexity (PCAOB, 2010).

strategic aims and at the same time supervising management. Also, AS2110 of Public Company Accounting Oversight Board (PCAOB, 2010) requires auditors to obtain an understanding of the company's' attributes that might have a significant impact on the risks of material misstatement including the company's objectives and strategies and those related business risks, and the components of internal control over financial reporting. These illustrate an explicit relationship between the two general functions of corporate governance and audit risk, which is also supported by empirical evidence such as Cohen et al. (2002) who note that, in an interview with auditors, 100% of respondents clearly indicate they gather and use governance information in the audit-planning process. Cohen et al. (2007) further find that, under the current business risk-based audit approach, a stronger monitoring and more strategic board role will decrease the auditor's assessed control risk and planned effort, all of which suggest a lower audit fee.

CS – the single shareholder who holds the *de facto* control of a given public firm and that shareholder himself is not effectively controlled by anyone else – can be expected to have an unchallenged influence on the board. Particularly, in China, when state plays the CS role, governments influence the listed company 'informally and formally' over the appointment of top executives and shape other sub-mechanisms of corporate governance via voting rights (DeFond et al., 1999, Clarke, 2003, Fan et al., 2007, Wang et al., 2008, Hung et al., 2015, Hou et al., 2015). Since these state representatives naturally bear different incentives compared to their non-state peers, which is one of the determinants of financial reporting quality (Baber et al., 2015), this study argues that their incentives also determine the tone of both aspects of corporate governance that eventually affect the auditor's anticipated business and control risk and audit fees.

First, state CSs' incentives encourage risk aversion in strategic decision-making. In companies ultimately controlled by the state, state representatives[18], usually former or current government bureaucrats (Fan et al., 2007), exercise all voting rights but no cash flow rights (Wang, 2015). Their promotion and compensation are measured by

18 Refers to bureaucrats in corresponding state asset management agency, CEOs and chairpersons appointed by the agency.

political and social objectives rather than by operating and financial performance[19] (Fan et al., 2007). Those bureaucrats responsible may not necessarily benefit from the company's economic gain, but they will almost certainly suffer political interests loss in the event of business failure (Shleifer and Vishny, 1997). As a result, although their low economic-driven incentives (e.g., profitability target, stock-based compensation, etc.) might eventually weaken firm's value maximization (Clarke, 2003, Wang, 2015), it should, on the other hand, tailor the business strategy towards risk aversion (Chen et al., 2010), which has proved to reduce audit effort and fees (Bentley et al., 2013).

Second, for the same reason, CSs affiliated with government are more likely than others to put management monitoring as their priority[20], which leads to an emphasis on strengthening ICOFR and/or overall internal control environment, therefore reducing audit risk. The sensitivity of political loss is partially reflected by a recent empirical study in China which shows that scandals related to political ties have a much more severe impact on firm value, performance and ability to obtain bank loan than those purely market-oriented scandals (Hung et al., 2015). More importantly, from the individual's perspective, zero cash flow rights means that state CSs do not have to bear the costs of excessive internal control themselves (Niemi, 2005). That is, the second-type agency cost is not a concern for such CSs. Consequently, the state CSs' sensitivity to political loss resulting from business failure and insensitivity of costs associated with internal control leads to companies' risk-aversive strategies and strengthened internal controls, which negatively impacts auditors' perceptions of control and business risks.

19 Admittedly, in certain circumstances, state representatives may have the incentive to window-dress earnings due to government's unusual pressure on them to deliver superior financial performance, which typically can be observed before and during overseas IPO (Chen et al. 2010).

20 This can be understood from two dimensions. First, CSs of SCEs themselves lack strong incentives to improve reported performance results in a relatively low incentive to manage earnings (Chen et al. 2010). Second, as noted before, if those state representatives failed to notice misreporting caused by error or fraudulent behavior, which was later discovered, their careers would be jeopardized to a much greater extent than what normal executives would suffer (Hung et al. 2015).

2.2.3 CS's preferential treatment effects

In addition to the CS's indirect incentive effects on perceivable control risk via corporate governance, in China, the CS affects auditor's expected litigation risk directly due to the preferential treatments the CS brings to the company.

First, the preferential access to bank loans for SCEs suggests lower litigation risk for their auditors. Like those in other developing economies, despite the fast-growing equity market, Chinese listed companies still heavily rely on bank loans as the preferred financial source (Fan et al., 2008, Chen et al., 2010). Such dominant position of banks in the Chinese financial sector makes the accessibility of bank loans an important litigation risk indicator of any given auditee (Allen et al., 2005, Fan et al., 2008). Prior studies suggest that state banks[21] tend to discriminate against non-state-controlled companies and give preferential treatment to SCEs via the differentiated cost of credit, loan standard and the amount of financing primarily for a number of reasons. First, set to address public welfare, SCEs are consequently politically favoured by the government that controls most of the financial resources through its ownership of the banks (Fan et al., 2008). Second, the debt of SCEs is naturally endorsed by the government they are affiliated with, which in turn minimises the lender's default risk concern (Chen et al., 2010). In addition, bank managers can informally benefit from a good relationship with the government through loans to SCEs, which usually brings

[21] Before 1983, China adopt a monobank system. The People's Bank of China (PBC) was the only bank that supply currency, loan as well as accept citizen's deposit. However, like other SOEs under planned economy, the PBC's activities were strictly based on command rather than criterion of profitability (Chow, 2002 p54). In 1983, the PBC had been nominally transformed to a central bank. However, different from Federal Reserve of the US who has independent authority, the PBC was, and still is, an executive unit of Chinese government (Naughton, 2007 p456).

At the same time, four specialized banks were established, which includes the Industrial and Commercial Bank of China (ICBC), the Agriculture Bank of China (ABC), the China Construction Bank (CCB) and the Bank of China (BOC). The term "specialized" means each of these four banks had been assigned a sector of operation. For example, ICBC and ABC were responsible for lending and saving in urban and rural areas respectively; the BOC handled for foreign trade and foreign exchange services (Naughton, 2007 p454-456). In 1993, the Third Plenum of 14th Central Committee of the CCP decided to give more independence to PBC and transform the four state-owned specialized banks to commercial banks (Chow, 2002 p235-236).

Today, although various type of banks, such as joint-stock commercial banks, city banks, policy banks and rural credit cooperatives, have been established in Chinese banking system, the four state-owned commercial banks still account for the biggest proportion of total banking system assets (53% in 2005) (Naughton, 2007 p456).

both working (e.g., daily operation, taxation etc.) and private benefits (e.g., promotion, employment of relatives, etc.) (Wang, 2015). These factors would result in their greater willingness to finance SCEs than to finance privately controlled ones even by sacrificing profitability (i.e. nonperforming loans, NPLs) (Brandt and Li, 2003, Fan et al., 2008).

Second, the perceived lower likelihood of SCEs being in business failure decreases the auditor's litigation risk expectation. Global-wise, it is not unusual that politically connected firms are more likely to receive government bailouts than their non-politically connected counterparts (Faccio et al., 2006). This is also valid in China and could be even more significant considering the extent of the Chinese government's involvement in listed companies. Specifically, different from non-state firms, when SCEs are facing financial distress, the forces behind state CSs – local and central government – are more likely to provide government bailout in order to avoid civil unrest caused by worker layoff (Wang et al., 2008, Wang, 2015). The techniques used by the government could be, but are not limited to, reducing the tax rate, injecting capital, enabling debt-equity swap and transferring the bad debt to state asset management companies/agencies (Chen et al., 2010). This creates implicit insurance that is commonly perceived by market participants (Hung et al., 2015), including the auditors.

2.2.4 Hypothesis development

Generally, previous studies suggest that the existence of CS affects a company's valuation (Claessens et al., 2002, Doidge et al., 2009) and corporate decisions (Bebchuk et al., 2000, Pérez-González, 2006, Masulis et al., 2009) via influencing actual and/or perceivable incentive 'concordance' between the CS and minority shareholders. Such concordance or non-concordance should also affect auditor's expectation of audit risk and audit fee at the pre-engagement stage. Entrenchment and incentive alignment are competing effects that stem from the CS. The former refers to the CS's unchallenged ability to exploit minority shareholder; whereas the latter refers to the CS's aligned incentive to improve corporate governance due to their higher ownership stake. They both have strong implications for auditors' perceived control and litigation risks. Moreover, the relationship can be further complicated when the CS's voting rights excessively exceed their cash flow rights (referred to as the two-right wedge), because

they could exploit minority shareholders at a relatively small cost, thereby suggesting an even higher risk exposure of audit failure for auditors. Despite prior evidence (Fan and Wong, 2005) suggesting that the threat from the potential entrenchment problem dominates the auditor's pricing strategy, nevertheless, the institutional setting of China makes prior established correlation questionable because of the unique way that the state CS affects the company and, in turn, auditors' perceptions, as discussed. Thus, this study argues that the CS's influences on audit fee could be jointly determined by three attributes of the CS – the type, the level of control and the wedge between voting and cash flow rights. As these effects could coexist, for a better understanding of how these factors individually and jointly affect audit fee, following sections discuss and propose hypotheses in a progressive manner (i.e. add one more factor in each hypothesis/test).

2.2.4.1 Effects of types of CS on audit Fee

As discussed, the nature of the CS determines their incentive that is fundamentally shaped by the institutional settings they are subject to (Chen et al., 2010). In addition to distinguishing state and non-state CSs, this study further classifies SCEs into two categories – SCEs affiliated with central government[22] (SCECG) and SCEs affiliated with local governments[23] (SCELG). From the perspective of the auditor, the former might differ from the latter in two aspects. First, in addition to a company's internal and external monitoring devices, SCECGs are also subject to audit by the National Audit Office (NAO). Due to its virtually unrestricted scope and information accessibility, the NAO's monitoring can be assumed as a strong audit risk mitigation factor. Second, state representatives in SCECGs have a higher political stake because many of them eventually become vice ministers of the state, which makes them tend to be more conservative about risks to avoid jeopardising their political career (Chen et al., 2009).

Hence, it is expected, compared with non-state-controlled firms, SCEs pay less audit fee due to the reduced perceived control and litigation risks brought by the CSs' state

22 Listed companies ultimately controlled by State-owned Assets Supervision and Administration Commission of the State Council (SASACSC) or other ministries of central government.

23 Listed companies ultimately controlled by State-owned Assets Supervision and Administration Commission at provincial and municipal levels; and Financial Bureau at provincial, municipal, district and county levels.

nature. Moreover, such reduction is more profound for SCECGs than that for SCELGs. This study thus tests the following hypothesis in the alternative form:

Hypothesis 1. SCECGs pay the lowest level of audit fee; followed by that of SCELGs; with NSs pay the highest, *ceteris paribus.*

2.2.4.2 Effects of level of control on audit Fee

Supplement to existing control concentration studies mentioned, based on the incentive effect argument, it is expected to be observed that differences in auditors' perceptions towards CS's impact on audit risk across different types of CS. Specifically, state representatives' 'scandal avoidance' oriented mindsets likely lead to more rigorous monitoring as well as conservative operating strategy, which can be recognised as a sign of incentive alignment. Presuming that such an effect is linked to the strength of control (proxies by percentage voting rights held), auditors should charge less with stronger state control, reflecting lowered risk exposure. On the other hand, for an auditee with a single private (natural person- or non-government-affiliated institutional shareholder) party dominating the board, the more votes they held, the higher risk they opt to use entrenched power to expropriate minority shareholders due to the fact that, unlike state CSs, they could directly benefit from such actions. Therefore, it is anticipated that, opposite to the state CS, auditors identify non-state CS's voting rights as a threat to the entrenchment problem and increase fee premiums accordingly to compensate associated costs and risks. This study thus tests the following hypothesis in the alternative form:

Hypothesis 2. Voting rights concentrated on state affiliated controlling shareholders have a negative effect on audit fee; whereas those on none-state affiliated controlling shareholders show a positive effect, *ceteris paribus.*

2.2.4.3 Effects of the control-ownership wedge on audit Fee

As suggested by Claessens et al. (2002), Fan and Wong (2002) and Zerni et al. (2010), the potential entrenchment effect could be magnified when CSs' voting rights

excessively exceed their cash flow rights, because they could exploit minority shareholders at a small fraction of the cost, suggesting an even higher control and litigation risk for the auditor.

Assuming auditors recognise the magnification and adjust the audit fee accordingly at the pre-engagement stage, then, again, it is expected that such perceptions vary with CS types. Specifically, regardless of the cash flow rights a state agency (as an institution) held, from the state representative's (as an individual) point of view, he/she cannot benefit, at least directly, from depredating minority shareholders. In this regard, for SCEs, the audit fee may not be affected by CSs' two-right wedge[24]. However, from another angle, a larger wedge may also indicate a longer control chain (via pyramidal/cross-shareholding, etc.), which means that the CS, regardless of type, could have a very limited influence on the company and audit fee provided such divergence was not created intentionally[25]. Therefore, the relationship between two-right wedges needs to be tested empirically. Hence, the third hypothesis in null form is:

Hypothesis 3. The magnitude of the wedge between voting and cash flow rights of different types of controlling shareholder has no effect on audit fee, *ceteris paribus.*

24 From the individual's point of view, state ownership represents a type of voting right with zero cash flow rights. In this sense, empirically, the impact of two-right divergence for SCEs on audit fee should be already included in estimated coefficients on any variables (and interactions) indicating state control (STATE, SCECG and SCELG; see empirical sections), because these indicators/dummies are simply also proxies of such zero-cash-flow tied (CV=0) control.

25 It is very important to note here that prior research is, in fact, based on an assumption that all cases of two-right separation are results of intentional behavior. This may have a ground for non-state CSs who are typically activist investors and more likely to make the effort to create a leverage for ethical or unethical reasons. However, the author suspects that the separation of cash flow rights and voting rights for state CSs are more likely to be an unintentional consequence due to their, supposedly, passive and risk-averse tendency. In this case, the two-right divergence for state CSs may not be the magnifier of the entrenchment effect. Instead, it is more likely to be perceived by auditors as a measurement of the distance (tightness) of state control. Hence, the increased level of two-right separation for state-controlled firms may lead to an audit fee increase due to the reduced 'beneficial' influences from government rather than the magnified entrenchment potential.

2.3 Research design

2.3.1 Data and sample selection

For following analyses, the China Stock Market and Accounting Research (CSMAR) database serves as the primary data source. Since audit fee data are only available since 2004, the sample spans the period 2004 to 2014. To calculate audit fee, CS influence and control variables, required information is obtained from several datasets of CSMAR[26], which formed a total of 20,833 firm-year observations. Due to differences in accounting treatments, firms in financial sectors, including insurance, banking and security companies, are excluded. Next, as research design calls for testing effects of controlling shareholders, final sample excludes firm-year observations without controlling equity and/or with missing voting rights data. CSMAR provides the identity of CS based on two standards. The study follows the approach of La Porta et al. (1999), Claessens et al. (2002), from which 'Standard 2' based entries[27] are adopted to get the names of the CSs. Table 2.1 reports steps took to construct the final sample.

Table 2.1 Sample selection

	Firm-Year Observations
Observations from CSMAR with daily price and weekly market index data between 1 Jan 2005 and 31Dec 2014	4,554,743
After VAR has been estimated, keep only firm-year observations on fiscal year-end; and combine them with required datasets from CSMAR for years 2005-2014	20,833
Less firm-year observations:	
Firms in the financial sector	−442

26 CSMAR datasets used include: Individual Stock Trading and Market Trading datasets of China Stock Market Series. Financial Statements, Financial Indices, Audit Opinion, Statements Release Dates, Merger & Acquisition, Corporate Governance, and Shareholder datasets of China's Listed Firms Research Series.

27 'Standard 1' is the identity of annual report-nominated controlling shareholder, whereas 'Standard 2' identifies CS following the procedures of La Porta et al. (1999) that trace back to the end of the control chain. The study adopts the latter because the researcher suspects CSs may conceal their identity from the annual report for various reasons. Thus, the chosen method should generate a more robust ground; and it has been used by prior research (Fan and Wong 2002, 2005). Moreover, as expertise with access to auditee's proprietary information, the auditor is unlikely or unable to identify real CSs even in the pre-engagement stage. So chosen data are also more relevant.

Firms not marked as effectively controlled by a single shareholder	−976
Missing voting rights data	−758
Sample observations (2005-2014)	18,657

CSs are classified into three categories: (1) non-state, non-government units, such as individuals and privately owned companies; (2) agencies affiliated with central government, such as ministries of central government and state-level capital management agencies; and (3) agencies affiliated with local governments, typically State-owned Assets Supervision and Administration Commission at provincial, city, district and county levels (Wang et al., 2008). To achieve this, a set of keyword matching is applied to the CSs' names, which identified half of the population. For the rest, the author manually collected their background information via online search and email and telephone enquiries.

2.3.2 Empirical model

Based on Simunic (1980) model, the overall model testing CS's effects on audit fee is set as follow,

$$\begin{aligned} Lnfee_{it} = {} & \beta_0 + \beta_1 CSInfluences_{it} + \beta_2 Engagement\ Complexity \\ & + \beta_3 Auditor?s\ Per-Unit\ Cost \\ & + \beta_4 Auditee?s\ Corporate\ Governance\ Characteristics \\ & + \beta_5 Litigation\ Risk\ Factors + Industry\ and\ Year\ fixed\ effects \end{aligned} \quad (2.3)$$

The dependent variable is the natural logarithm of total audit fee paid to the auditor in given fiscal year. The independent variable, *CS Influences*, is a set of variables introduced to capture the attributes of CS – namely, types, the level of control, and control-ownership wedge. To measure the types of CS, the study adopts a set of CS nature indicator variables, i.e. *STATE*, *SCECG*, *SCELG* and *NS* (non-state-affiliated, omitted from regressions as the reference group). *STATE* is a dummy variable that is equal to one if the client's ultimate CS is either central government (affiliated) or local government (affiliated) agencies, and zero otherwise. Similarly, *SCECG*/*SCELG* is set to one if the client's ultimate CS is central/local government (affiliated) agencies, and zero otherwise. To capture the level of control, the study uses the percentage of voting rights held by the CS (*VOTING*) as a proxy for control concentration. Further, tests adopt the

ratio of the CS's cash flow rights over voting rights (*CV*) as the measure of control-ownership divergence. It ranges from 1 to 0, and a higher value indicates lower level of divergence; that is, a lower level of two-right wedge.

Empirical tests also include four sets of controls (*Engagement Complexity, Auditor's Per-Unit Cost and profit, Auditee's Corporate Governance Characteristics, Litigation Risk Factors*) that affect audit fee as suggested by prior studies. The first set of controls is the *Engagement Complexity*. Model includes auditee's size (*LnASSET*) as a larger client may be inherently more complicated (PCAOB, 2010) and, in turn, lead to higher audit fee; and four ex-post measures, *MOpinion*, *LagDays*, *NEWSHARE* and *MA*, as whenever concerns arise, auditors are expected to increase the timing and extent of planned substantive and analytical procedures accordingly, which complicates the engagement and increases the audit fee (Demirkan and Zhou, 2016). Further, cross-listing status (*CROSS*) is included since cross-listing in markets [28] with different disclosure requirements[29] increases litigation risk and associated effort, and, in turn, increases audit fee (Bronson et al., 2017).

[28] The 'cross-listing' here specifically refers to public companies issue A-share (shares tradable in Shanghai or Shenzhen stock exchange) and H-share (shares tradable in the Hong Kong stock exchange) simultaneously. There are three types of tradable shares in Chinese stock market namely A-share, B-share and H-share. All companies listed in Shanghai (SSE) or Shenzhen stock exchange (SZSE) issue A-share, denominated in Chinese currency-RMB, to domestic investors. The A-share is the primary tradable share type in Chinese stock market. Some of A-share issuers also simultaneously issue B-share, denominated in foreign currencies, which only available to foreign investors before 2001, now opened to all investors. H-share are shares issued by companies registered in mainland China but listed on Hong Kong stock exchange (HKEx). Mainland institutional investors can invest H-share, but the direct investment channel for mainland citizens is still unavailable.

[29] In fact, these three types of shares mentioned have more differences than currency. First, different share type bundles different reporting requirement. The CSRC requires listed firms exclusively issuing A-share prepare financial reports based on domestic accounting standard (DAS) and audited by CPA. Whereas those simultaneously issuing B or H share are required to also prepare an extra set of financial reports in accordance with International Financial Reporting Standards (IFRS) and Hong Kong Financial Reporting Standard (HKFRS) respectively and audited by international Big 4 audit firms (Gul et al., 2010). Second, A/B-Share and H-share are under different regulatory and legal environment. Because H-share's issuers are listed on Hong Kong Stock Exchange but registered in mainland china, companies and associated intermediaries are supervised by China and Hong Kong dual-system (Allen et al., 2005, Morck et al., 2000).

Hong Kong, as a special administrative region, retained its independent legal system. As a result, different from that of SSE and SZSE, HKEx has a more sophisticated regulatory structure. Its major regulator is the Securities and Futures Commission (SFC), which is an independent statutory body established in 1989 by the Securities and Futures Commission Ordinance (SFCO). The SFCO and nine other securities and futures related ordinances were consolidated into the Securities and Futures Ordinance (SFO), which came into operation on 1 April 2003 (HKEx, 2013).

The second set of controls is *Auditor's Per-Unit Cost and profit*, which is measured by the type of auditor (*BIG4*). Prior studies document that the Big4 are usually associated with a premium. This is because, on the one hand, 'deep pocket' theory suggests Big4 auditors have 'more to lose' in terms of both economic and reputational aspects (DeAngelo, 1981). Thus, they are expected to spend more on staff training and maintaining the quality of teams, which increases per-unit cost. On the other hand, the, arguably, superior actual and perceivable audit quality enable the Big4 to charge a premium (Choi et al., 2008a). In addition, since prior research well established that industry speciality usually associated with a premium, this study follows Mayhew and Wilkins (2003) and Bae et al. (2016) include a dummy variable *ISA* to control for such factor, which equals 1 if the auditor has 20 percent or higher market share (measured by total audit income) in that industry and that year; 0 otherwise. This dynamic setting ensures the growth, competition and merger within the audit industry to be taken into account.

The third set of controls is *Auditee's Corporate Governance Characteristics.* For decades, both academic literature (Carcello and Neal, 2000) and regulators (Financial Reporting Council, 2016) pay a great amount of attention to the importance of a strong and independent audit committee to external audit. Thus, the existence of auditee committee (*AuditCom*) and the number of non-executive directors in the audit committee (*ACIndy*) are included to control the functionality and independence of the client's audit committee. Further, model controls for the overall monitoring effectiveness of corporate governance by including CEO/Chairman duality (*Dual*) and the percentage of non-executive directors on the board (*BoardIndy*) (Carcello et al., 2002).

The last set is *Litigation Risk Factors*. Following prior studies (Simunic, 1980, Stice, 1991, Krishnan and Krishnan, 1997, Wang et al., 2008, Lawson and Wang, 2016), tests control for litigation risks by introducing ratio of account receivable over total assets (*RA*) and the ratio of inventory to total assets (*IA*). Because these accounts are subject to subjective judgment to determine their value, and even a small error in such judgment could lead to the potential of material misstatement to be magnified, providing the auditee's balance is large enough. Change in sales (*GROWTH*) reflects the

concern that fast-growing companies without a corresponding strengthening of internal control usually result in an increase in detected errors and, in turn, litigation potential. Altman Z-score (*ZSCORE*), financial leverage (*LEV*), operating return on average assets (*ROA*), negative earnings (*LOSS*) and stock status mark (*ST*) are included to control for auditee's financial condition since, on the one hand, managers of companies facing financial distress are more likely to window-dress accounting figures (PCAOB, 2010) and, consequently, introduce more errors in their financial statements. On the other hand, stakeholders bearing loss due to a company's poor financial condition are more likely to seek compensation from a 'deep pocket', probably the auditor, by filing a lawsuit regardless of whether the particular cause is audit-related or not. The tenure of the auditor-client relationship (*TENURE*) is also included. There are conflicting views regarding the impact of tenure on audit fee. A long tenure may decrease litigation risk and fee due to the knowledge spillover of previous experiences with the auditee. Meanwhile, however, an opposite effect may be observed as a result of the increased value of such experiences of the auditor. The dependence of the auditor on the auditee (*INDEPENDENCE*) is included to control for the auditors' proclivity to disclose the discovered error, or even fraud, based on the concern that lower independence offers clients greater ability to pressure the auditor into not disclosing negative information. Variability of return (*VAR*) is included since a firm with more volatile stock return is more likely to cause investors to lose and, thus the chance to attract a lawsuit against its auditor is greater. Finally, tests include the auditee's year-end market value (*LnMV*) as a control of the magnitude of the auditor's potential liability once successful legal actions (filed by equity investors) against auditing this period's financial statements.

To test the effect of CS types on audit fees (**Hypothesis 1**), analyses regress the natural logarithm of audit fees (*LnFee*) on CS nature indicator variables, *STATE*, *SCECG,* and *SCELG*, with non-state-controlled clients (*NS*) as the reference (omitted) group. If proposed audit fee reduction effects brought by state-affiliated CSs exist, negative and statistically significant coefficients of these indicator variables should present. For tests of effects from control concentration on audit fee (**Hypothesis 2**), based on the assumption that (auditor-perceived) incentive alignment effect and entrenchment effect brought by control concentration are both opposite and exclusive to each other (i.e. the CS of a given company is either mitigate or worsen audit risk), author uses voting rights held by the CS (*VOTING*) as the proxy of both effects whose sign indicates

the judgement of the auditor. This study first regresses *LnFee* on the *VOTING* using pooled, and CS-type categorised subsamples to differentiate the auditor response driven by the CS. Specifically, if auditors perceive that a particular type of CS poses the threat of an entrenchment problem, a significantly positive coefficient on *VOTING* should be observed, whereas if the CS is perceived to be beneficial for aligning the incentive of principle and executive (or the CS and minority shareholders), such coefficient is expected to be significant and negative. Then the author further introduces interaction terms between CS-type dummies and *VOTING* to test the relative magnitude and significance of fee difference between state groups and the non-state group. To confidently accept Hypothesis 2, significant and negative coefficients on *VOTING* and interaction terms are expected.

Similarly, in tests of Hypothesis 3, the author includes CS's voting to cash flow right ratio (*CV*) as the proxy of the two-right wedge and regress group by group. Estimated coefficients on *CV* represent the auditor's response to situations when the CS keeps obtaining more voting rights without bonded cash flow rights.

In all the model specifications, author controls for the industry-fixed effects with industries based on two-digit industry classification code and year-fixed effect. All variables are defined in Appendix A. All the *t*-statistics reported are based on heteroscedasticity-robust standard errors. Further, this study adopts propensity score-matching to address potential endogeneity issues.

2.3.3 Propensity score matching

A large number of demand-side studies interpret the audit fee as a result of auditee's demand for external monitoring (Carcello et al., 2002, Abbott et al., 2003), which implies there could be a reverse causality that the potentially lower audit fee associated with any particular type of CS is merely a consequence of their tendency to shop for a cheaper audit. To mitigate this potential concern about endogeneity, the author adopts the propensity score matching method[30] to restructure final sample; and uses matched

[30] Streiner and Norman (2012) summarized two major difficulties when employing PSM method, namely the choice of covariates (matching variables/criteria) and the choice of matching method. In terms of the former, although early studies, such as Rosenbaum and Rubin (1983), Rosenbaum and Rubin (1984), describe propensity score as modelling treatment allocation process (Austin et al., 2007), some recent

samples to verify main tests. To be specific, the author applies auditor choice (Big4 versus none-Big4) as a proxy for the level of CSs' demand for audit. By creating a pseudo random sample including each Big4 audited company with a none-Big4 audited pair that is very similar in terms of all identified audit fee determinants, it should to be observed that differences between the two groups as a result of treatment effect rather than pre-existing auditee characteristics; in this case, inherent audit demand differentiations (Lawrence et al., 2011, Eshleman and Guo, 2014).

This study uses a logit regression model to estimate the probability of choosing a Big4 auditor (a proxy of demand). As the matching models do not require exclusion restrictions, Lawrence et al. (2011) documented that the general rule is to include a list of attributes that is as comprehensive as possible. As a result, the author estimates the propensity score using equation (2.4) which includes all variables used in main tests with the exception of *ex post* measures *MOpinion* and *LagDays*. After obtaining the fitted values, the study then applies the calliper-matching method, without replacement, to construct pairs to avoid a bad match. Following Austin (2011a), the calliper widths are set to 0.02 times the standard deviation of each year's propensity score. Since the paired sample is constructed to eliminate potential endogeneity caused by certain types of CSs' inherent preference on audit fee, following analyses use the matched sample in regressions pertaining to inter-group comparison and unmatched sample in group-by-group regressions.

studies, such as Lawrence et al. (2011), suggested to include all variables potentially related to the outcome in the matching model. Despite the lack of consensus, through numerous Monte Carlo simulations, Austin et al. (2007) concluded that 1) no matter which of above variable sets are used in the matching model, the selection bias in the matched sample will be greatly lower than that of unmatched one; 2) nevertheless, omit true confounding variables still likely result in biased estimation; 3) although predictors of outcomes might be uniform, predictors of treatment allocation process are likely vary across macro context such as regions or jurisdictions. Therefore, this study choose to adopt all outcome predictors as matching variables in order to isolate context variances by unfirming variable sets. Meanwhile, as, admittedly, it is difficult, if not impossible, to precisely identify every single confounding variables of treatment allocation, the author utilize the best available alternative – following the highly recognized relevant research of Lawrence et al. (2011), which not only provides a theoretically solid ground, but also makes the result highly reproducible and comparable.

Regarding to the choice of matching method, the design closely followed (Austin, 2008, Austin, 2011b). First, caliper match adds an additional restriction on top of Nearestnabourhood method, which makes it a more cautious choice at the cost of higher subject loss (i.e. unmatched observations). Second, excluding replacements fit the independent assumption underlying logistic regression which is recommended by Austin (2011b). Third, the caliper here follows the recommendation of 0.2 times standard deviation of logistic based score, which is highly strict.

$$
\begin{aligned}
BIG4_i = {} & \beta_0 + \beta_1 SCECG_i + \beta_2 SCELG_i + \beta_3 VOTING_i + \beta_4 LnASSET_i \\
& + \beta_5 NEWSHARE_i + \beta_6 CROSS_i + \beta_7 MA_i + \beta_8 ISA + \beta_9 AuditCom_i + \beta_{10} Dual_i \\
& + \beta_{11} BoardIndy_i + \beta_{12} ACIndy_i + \beta_{13} RA_i + \beta_{14} IA_i + \beta_{15} GROWTH_i \\
& + \beta_{16} ZSCORE_i + \beta_{17} TENURE_i + \beta_{18} VAR_i + \beta_{19} LnMV_i + \beta_{20} LEV_i \\
& + \beta_{21} ROA_i + \beta_{22} LOSS_i + \sum Industry\ Fixed\ Effect_i + \varepsilon_i
\end{aligned}
\tag{2.4}
$$

2.3.4 Descriptive statistics

The study presents descriptive statistics for all variables used in regression analyses across the three sub-groups based on the types of CS in Table 2.2 Panel A. The author also reports whether mean values of central government-controlled (SCECGs) and local government-controlled firms (SCELGs) are significantly different from those of non-state-controlled ones (NSs) (Two-tailed *t*-test).

There are 9,407 NS, 2,893 SCECG and 6,357 SCELG firm-year observations, which account for approximately 50%, 16% and 34% of the full sample (18,657), respectively. This indicates that half of the sample firms are state-controlled firms. The average audit fees paid by NS, SCECG, and SCELG are ¥573,779, ¥882,046 and ¥707,859, respectively; and the mean total assets are ¥1,610,805,170, ¥4,839,126,162 and ¥3,478,962,647, respectively. The differences between the means of auditor fee and firm size of state groups and those of non-state group are significant at one percent. This is in line with author's experience that SCECGs are largest companies and pay the highest amount of audit fee due to the complexity associated with their size; that SCELGs are smaller firms and pay lower fees; and that NSs are on average, the smallest, and thus the lowest fee. In addition, the mean length of audit period (*LagDays*) for NS, SCECG, and SCELG are 92.19, 89.39 and 91.09 days, respectively. Since auditor's input quantity is set to compensate for expected control and litigation risk, seeing *LagDay* as an *ex post* measure of the amount of audit input actually provides initial evidence of the types of CS being associated with auditor's risk exposure.

The table shows significant differences in some other control variables among subsamples that support the design to control for them in following multivariate analyses. For controls of clients' corporate governance characteristic, the existence of audit committee (*AuditCom*) and the number of non-executive directors (NED) in audit

committee (*ACIndy*) are significantly (p<0.01) higher in state-controlled groups than that of NSs. CEO/chairman duality (*Dual*) is significantly (p<0.01) lower in the former than that of the latter. These are consistent with the view that CSs affiliated with governments improve auditees' corporate governance. For control variables of litigation risk, compared with those of NSs, state-controlled firms have significantly lower account receivable ratio (*RA*), inventory ratio (*IA*), Altman Z-score (*ZSCORE*) and return volatility (*VAR*), suggesting that these firms are subject to slimmer chances of material misstatement, lower bankruptcy risk and more stable return, respectively. Moreover, relatively higher leverage (*LEV*), lower return on assets (*ROA*) and more incidences of negative earnings (*LOSS*) for state groups are due to their preferential access to bank loan and CSs' lower profit-oriented incentive, which also fit the theory.

Table 2.2 Descriptive statistics and correlation matrix

Panel A: Descriptive statistics							
Variables	**CS nature**	**N**	**Mean**	**S.D.**	**25%**	**Med.**	**75%**
LnFee	Full	16,929	13.40	0.750	12.90	13.30	13.71
	NSs	8,468	13.26	0.550	12.90	13.22	13.58
	SCECGs	2,674	13.69***	1.110	12.90	13.43	14.08
	SCELGs	5,787	13.47***	0.730	12.97	13.38	13.82
SCELG	Full	18,657	0.340	0.470	0	0	1
	NSs	9,407	0	0	0	0	0
	SCECGs	2,893	0	0	0	0	0
	SCELGs	6,357	1	0	1	1	1
SCECG	Full	18,657	0.160	0.360	0	0	0
	NSs	9,407	0	0	0	0	0
	SCECGs	2,893	1	0	1	1	1
	SCELGs	6,357	0	0	0	0	0
VOTING	Full	18,657	0.400	0.160	0.270	0.390	0.510
	NSs	9,407	0.380	0.160	0.250	0.360	0.500
	SCECGs	2,893	0.430***	0.160	0.300	0.440	0.540
	SCELGs	6,357	0.400***	0.160	0.290	0.390	0.520
CV	Full	18,628	0.830	0.240	0.680	1	1
	NSs	9,392	0.780	0.250	0.600	0.900	1
	SCECGs	2,880	0.850***	0.220	0.700	1	1
	SCELGs	6,356	0.890***	0.200	0.910	1	1
LnASSET	Full	18,654	21.63	1.340	20.77	21.50	22.34
	NSs	9,406	21.20	1.120	20.54	21.12	21.84
	SCECGs	2,893	22.30***	1.630	21.19	22	23.12
	SCELGs	6,355	21.97***	1.260	21.12	21.86	22.74
MOpinion	Full	18,656	0.060	0.230	0	0	0
	NSs	9,406	0.060	0.240	0	0	0
	SCECGs	2,893	0.040***	0.200	0	0	0

	SCELGs	6,357	0.060*	0.230	0	0	0
LagDays	Full	18,563	91.38	21.74	79	90	110
	NSs	9,330	92.19	22.57	80	93	111
	SCECGs	2,884	89.39***	20.19	78	89	108
	SCELGs	6,349	91.09***	21.12	79	90	109
NEWSHARE	Full	18,657	0.290	0.450	0	0	1
	NSs	9,407	0.300	0.460	0	0	1
	SCECGs	2,893	0.300*	0.460	0	0	1
	SCELGs	6,357	0.270***	0.450	0	0	1
CROSS	Full	18,657	0.030	0.170	0	0	0
	NSs	9,407	0.010	0.090	0	0	0
	SCECGs	2,893	0.100***	0.290	0	0	0
	SCELGs	6,357	0.040***	0.180	0	0	0
MA	Full	18,657	0.420	0.490	0	0	1
	NSs	9,407	0.430	0.500	0	0	1
	SCECGs	2,893	0.400***	0.490	0	0	1
	SCELGs	6,357	0.410***	0.490	0	0	1
BIG4	Full	18,656	0.060	0.230	0	0	0
	NSs	9,406	0.020	0.150	0	0	0
	SCECGs	2,893	0.140***	0.350	0	0	0
	SCELGs	6,357	0.070***	0.250	0	0	0
ISA	Full	18,656	0.150	0.360	0	0	0
	NSs	9,406	0.146	0.353	0	0	0
	SCECGs	2,893	0.190***	0.390	0	0	0
	SCELGs	6,357	0.140	0.350	0	0	0
AuditCom	Full	18,656	0.760	0.430	1	1	1
	NSs	9,406	0.750	0.430	1	1	1
	SCECGs	2,893	0.770***	0.420	1	1	1
	SCELGs	6,357	0.770***	0.420	1	1	1
Dual	Full	18,611	0.210	0.410	0	0	0
	NSs	9,367	0.320	0.470	0	0	1
	SCECGs	2,892	0.070***	0.250	0	0	0
	SCELGs	6,352	0.110***	0.310	0	0	0
BoardIndy	Full	18,465	0.370	0.050	0.330	0.330	0.400
	NSs	9,315	0.370	0.050	0.330	0.330	0.430
	SCECGs	2,864	0.360***	0.060	0.330	0.330	0.380
	SCELGs	6,286	0.360***	0.050	0.330	0.330	0.380
ACIndy	Full	18,657	1.880	1.540	1	2	3
	NSs	9,407	1.730	1.450	0	2	2
	SCECGs	2,893	2***	1.650	1	2	3
	SCELGs	6,357	2.040***	1.600	1	2	3
RA	Full	18,498	0.120	0.300	0.030	0.090	0.170
	NSs	9,315	0.140	0.410	0.040	0.110	0.190
	SCECGs	2,884	0.130**	0.160	0.030	0.090	0.180
	SCELGs	6,299	0.090***	0.110	0.020	0.050	0.120
IA	Full	18,394	0.180	0.170	0.070	0.140	0.220
	NSs	9,218	0.180	0.170	0.080	0.130	0.220

	SCECGs	2,882	0.170***	0.140	0.070	0.150	0.220
	SCELGs	6,294	0.170**	0.160	0.060	0.130	0.230
GROWTH	Full	17,262	9.710	1031	-0.020	0.120	0.290
	NSs	8,238	3.550	172	-0.030	0.130	0.310
	SCECGs	2,807	0.38	7.250	-0.010	0.130	0.280
	SCELGs	6,217	22.08	1707	-0.020	0.110	0.270
ZSCORE	Full	17,972	6.780	29.33	1.810	3.300	6.400
	NSs	8,931	9.530	40.37	2.450	4.550	9.380
	SCECGs	2,836	4.570***	10.58	1.560	2.730	4.650
	SCELGs	6,205	3.830***	8.540	1.460	2.410	4.120
TENURE	Full	18,656	4.650	2.520	3	4	6
	NSs	9,406	4.420	2.380	3	4	6
	SCECGs	2,893	4.570***	2.410	3	4	6
	SCELGs	6,357	5.010***	2.720	3	4	7
INDEPENDENCE	Full	16,942	0.970	0.070	0.970	0.990	1
	NSs	8,471	0.970	0.060	0.970	0.990	1
	SCECGs	2,677	0.960***	0.080	0.970	0.990	0.990
	SCELGs	5,794	0.960***	0.080	0.960	0.980	0.990
VAR	Full	18,184	0.030	0.050	0.020	0.030	0.040
	NSs	9,013	0.040	0.050	0.020	0.030	0.030
	SCECGs	2,872	0.030***	0.020	0.020	0.030	0.040
	SCELGs	6,299	0.030***	0.050	0.020	0.030	0.040
LnMV	Full	18,223	22	1.070	21.31	21.91	22.59
	NSs	9,046	21.85	0.910	21.27	21.80	22.41
	SCECGs	2,874	22.41***	1.330	21.51	22.20	23.12
	SCELGs	6,303	22.03***	1.120	21.31	21.95	22.68
LEV	Full	18,657	0.480	0.260	0.300	0.470	0.630
	NSs	9,407	0.430	0.290	0.220	0.400	0.570
	SCECGs	2,893	0.530***	0.220	0.380	0.540	0.680
	SCELGs	6,357	0.530***	0.220	0.380	0.540	0.670
ROA	Full	17,378	0.040	0.080	0.010	0.040	0.080
	NSs	8,330	0.040	0.080	0.010	0.040	0.080
	SCECGs	2,810	0.030***	0.070	0.010	0.030	0.070
	SCELGs	6,238	0.030***	0.080	0.010	0.030	0.070
LOSS	Full	18,657	0.100	0.310	0	0	0
	NSs	9,407	0.090	0.290	0	0	0
	SCECGs	2,893	0.130***	0.340	0	0	0
	SCELGs	6,357	0.110***	0.320	0	0	0
ST	Full	18,657	0.040	0.190	0	0	0
	NSs	9,407	0.030	0.180	0	0	0
	SCECGs	2,893	0.040	0.190	0	0	0
	SCELGs	6,357	0.040	0.190	0	0	0

Panel B: Pearson correlation matrix																
Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
(1)LnFee	1															
(2)NS	**-0.19**	1														
(3)SCECG	**0.15**	**-0.43**	1													
(4)SCELG	**0.08**	**-0.73**	**-0.30**	1												
(5)STATE	**0.19**	-1	**0.43**	**0.73**	1											
(6)VOTING	**0.17**	**-0.10**	**0.09**	**0.04**	**0.10**	1										
(7)CV	**0.03**	**-0.21**	**0.04**	**0.19**	**0.21**	**0.22**	1									
(8)LnASSET	**0.73**	**-0.33**	**0.21**	**0.18**	**0.33**	**0.24**	**0.06**	1								
(9)MOpinion	**-0.09**	**0.02**	**-0.03**	-0.01	**-0.02**	**-0.15**	**-0.08**	**-0.24**	1							
(10)LagDays	**0.07**	**0.04**	**-0.04**	-0.01	**-0.04**	**-0.03**	-0.01	0.00	**0.15**	1						
(11)NEWSHARE	**0.07**	**0.03**	0.01	**-0.03**	**-0.03**	0.00	0.01	**0.11**	**-0.05**	**-0.11**	1					
(12)CROSS	**0.48**	**-0.13**	**0.16**	0.02	**0.13**	**0.06**	**0.04**	**0.35**	**-0.02**	-0.02	**-0.04**	1				
(13)MA	**0.10**	**0.03**	-0.02	-0.02	**-0.03**	-0.01	-0.01	**0.14**	**-0.03**	**-0.04**	**0.13**	0.00	1			
(14)BIG4	**0.50**	**-0.15**	**0.15**	**0.04**	**0.15**	**0.12**	-0.01	**0.37**	**-0.04**	-0.01	-0.02	**0.47**	0.01	1		
(15)AuditCom	**0.09**	**-0.03**	0.01	0.02	**0.03**	**-0.09**	-0.02	**0.14**	**-0.03**	0.00	**0.13**	**-0.11**	**0.13**	**-0.05**	1	
(16)Dual	**-0.09**	**0.28**	**-0.15**	**-0.18**	**-0.28**	-0.01	**0.04**	**-0.16**	-0.00	**0.02**	-0.00	**-0.04**	-0.01	**-0.07**	**-0.02**	1
(17)BoardIndy	**0.07**	**0.09**	**-0.03**	**-0.07**	**-0.09**	**0.06**	**0.06**	**0.04**	0.00	**0.02**	0.01	**0.06**	0.01	**0.04**	**0.05**	**0.10**
(18)ACIndy	**0.15**	**-0.10**	**0.03**	**0.08**	**0.10**	**-0.07**	-0.01	**0.17**	-0.00	0.00	**0.11**	**-0.05**	**0.08**	-0.01	**0.62**	**-0.05**
(19)RA	**-0.05**	**0.08**	0.01	**-0.08**	**-0.08**	**-0.03**	-0.01	**-0.14**	**0.12**	**0.04**	0.00	**-0.02**	-0.01	**-0.03**	0.00	**0.04**
(20)IA	0.01	0.02	-0.02	-0.01	-0.02	0.02	-0.01	**0.06**	0.01	-0.00	0.00	**-0.04**	**0.07**	**-0.04**	**0.07**	**-0.02**
(21)GROWTH	-0.01	-0.01	-0.01	0.01	0.01	0.01	0.01	-0.00	-0.00	0.01	0.01	-0.00	-0.01	-0.00	0.00	-0.00
(22)ZSCORE	**-0.07**	**0.09**	**-0.03**	**-0.07**	**-0.09**	0.01	**0.04**	**-0.13**	-0.01	**-0.04**	**-0.02**	**-0.03**	-0.02	**-0.03**	-0.02	**0.05**
(23)TENURE	**0.13**	**-0.09**	-0.01	**0.10**	**0.09**	**-0.11**	**-0.06**	**0.13**	**-0.05**	**-0.04**	**0.02**	**0.09**	**0.03**	**0.16**	**0.12**	**-0.06**
(24)INDEPENDENCE	**-0.07**	**0.09**	**-0.02**	**-0.07**	**-0.09**	0.01	0.00	**-0.07**	**-0.05**	-0.01	**0.03**	**-0.07**	-0.01	**0.03**	**0.10**	**0.06**
(25)VAR	**-0.08**	**0.04**	-0.02	**-0.03**	**-0.04**	**0.03**	0.00	**-0.10**	-0.01	-0.02	0.00	-0.01	-0.02	-0.02	**-0.13**	**0.03**
(26)LnMV	**0.61**	**-0.14**	**0.17**	0.02	**0.14**	**0.25**	**0.09**	**0.75**	**-0.20**	**-0.06**	**0.13**	**0.29**	**0.14**	**0.32**	**0.17**	**-0.05**
(27)LEV	**0.15**	**-0.20**	**0.08**	**0.15**	**0.20**	**-0.11**	**-0.12**	**0.15**	**0.38**	**0.08**	**0.07**	**0.05**	**0.06**	**0.04**	**0.05**	**-0.13**
(28)ROA	**0.09**	**0.06**	**-0.03**	**-0.04**	**-0.06**	**0.19**	**0.06**	**0.22**	**-0.41**	**-0.19**	**0.06**	**0.04**	**0.08**	**0.07**	**0.03**	0.01
(29)LOSS	**-0.05**	**-0.04**	**0.03**	0.02	**0.04**	**-0.12**	**-0.06**	**-0.14**	**0.34**	**0.16**	**-0.05**	-0.01	**-0.07**	**-0.04**	0.01	**-0.03**
(30)ST	**-0.08**	-0.01	-0.00	0.01	0.01	**-0.08**	**-0.06**	**-0.17**	**0.30**	0.02	-0.02	-0.01	-0.01	**-0.04**	-0.02	-0.01
(31)ISA	**0.16**	-0.02	**0.05**	-0.02	0.02	**0.05**	**0.02**	**0.10**	-0.02	0.01	0.00	**0.10**	**0.02**	**0.11**	0.01	-0.01

Variables	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
(17)BoardIndy	1														
(18)ACIndy	**0.03**	1													
(19)RA	0.01	-0.01	1												
(20)IA	**0.03**	**0.05**	0.02	1											
(21)GROWTH	-0.01	0.00	-0.00	-0.00	1										
(22)ZSCORE	**0.03**	**-0.03**	**-0.07**	**-0.14**	-0.00	1									
(23)TENURE	**0.03**	**0.08**	**-0.05**	**0.02**	-0.01	**-0.04**	1								
(24)INDEPENDENCE	0.02	**0.08**	0.01	**-0.04**	-0.00	**0.03**	-0.00	1							
(25)VAR	-0.01	**-0.10**	0.00	-0.00	0.00	**0.03**	**-0.03**	-0.02	1						
(26)LnMV	**0.08**	**0.16**	**-0.09**	**-0.03**	-0.00	**0.03**	**0.10**	-0.01	-0.01	1					
(27)LEV	-0.01	**0.10**	**0.13**	**0.27**	0.01	**-0.23**	**0.05**	**-0.10**	**-0.04**	**-0.07**	1				
(28)ROA	-0.01	-0.01	**-0.11**	**-0.08**	0.01	**0.11**	**0.05**	0.02	0.02	**0.39**	**-0.48***	1			
(29)LOSS	-0.01	**0.04**	**0.06**	0.01	-0.00	**-0.04**	**-0.03**	**-0.02**	**-0.02**	**-0.21**	**0.29**	**-0.59**	1		
(30)ST	0.00	0.00	**0.09**	**0.03**	0.00	**-0.03**	**-0.03**	**-0.04**	**0.05**	**-0.16**	**0.25**	**-0.21**	**0.13**	1	
(31)ISA	**0.02**	**0.02**	0.00	-0.02	0.00	0.00	0.00	**0.06**	0.00	**0.10**	-0.02	**0.03**	-0.02	-0.02	1

Panel C: Auditor choice by controlling shareholders											
	Full Sample	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Full Sample											
Total number of firms	18,657	1,274	1,345	1,435	1,498	1,650	2,002	2,240	2,355	2,380	2,478
Ratio choosing Big4	6%	7%	7%	7%	6%	6%	5%	5%	5%	5%	5%
NS											
Total number of firms	9,406	388	466	548	596	734	1,046	1,285	1,391	1,422	1,530
Ratio choosing Big4	2%	5%	4%	3%	3%	2%	2%	2%	2%	2%	2%
SCECG											
Total number of firms	2,893	241	250	257	284	296	318	319	316	308	304
Ratio choosing Big4	14%	13%	12%	14%	14%	14%	13%	15%	15%	15%	14%
SCELG											
Total number of firms	6,357	645	629	630	618	620	637	636	648	650	644
Ratio choosing Big4	7%	7%	7%	7%	6%	6%	7%	8%	8%	7%	7%
SCECG+SCELG											
Total number of firms	9,250	886	879	887	902	916	955	955	964	958	948
Ratio choosing Big4	9%	8%	8%	9%	9%	9%	9%	10%	10%	10%	10%

Note:

Panel A reports whether the mean values of SCECGs and SCELGs are significantly different from those of NSs. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively (two-tailed) of the mean tests (compared with NSs). All variable definitions are presented in Appendix A.

In Panel B, **Bold** font denotes correlations that are statistically significant at p<0.005. See Appendix A for variable definitions.

The Pearson correlation matrix for all variables used in the main tests is presented in Panel B of Table 2.2. In all regressions, none of the variance inflation factors is greater than 10 (Kennedy 2008). Consistent with Bronson et al. (2017), Demirkan and Zhou (2016) and Stice (1991), size (*LnASSET*), last days (*LagDays*), demand of equity financing (*NEWSHARE*), cross-listing (*CROSS*), merger and acquisition (*MA*) and leverage (*LEV*) are positively related with audit fee, while modified audit opinion (*MOpinion*) is negatively related with audit fee.

Panel C of Table 2.2 reports the auditor choice distribution across sample years by the types of CSs. The first column (Full Sample) shows that 14% of SCECG and 7 % of SCELG choose Big4 auditors respectively, comparing to only 2% for NS firms. Putting SCECG and SCELG together, 9% of SCEs employ Big4, which is four and a half times that of NS firms. That is, assuming Big4 and none-Big4 auditors represent two tiers of price, it can be observed that government-affiliated companies tend to hire a more expensive auditor, and the tendency is uniform across the sample period. This is consistent with the expectation that the CSs of SCECGs have the highest motivation to strengthen companies' monitoring mechanisms and care least about the associated costs; followed by that of SCELGs; with NS's CSs sitting at the bottom, which also provides initial evidence that the results of the main tests are unlikely to be driven by reverse causality.

2.4 Empirical results

2.4.1 Types of CS and audit Fee

This study first examines the impact of the types of CS on the audit fee and report the results in Table 2.3. In the first four columns of Table 2.3, the author presents two pooled OLS regressions of audit fees on the type of CS using the full sample. Model (1.1) shows a significant ($p<0.01$) and negative coefficient on *STATE*. It suggests that, compared with non-state-controlled firms, companies whose CSs are government affiliated are expected to pay 2.4% less audit fee, *ceteris paribus*. Given that the impact of state CSs could vary according to the level of government they are associated with, in regression (1.2), the researcher further split SCEs into two categories – SCECG and SCELG. Results find significantly negative coefficients on both *SCECG* (Coef. = -0.044, $p<0.01$) and *SCELG* (Coef. = -0.015; $p<0.05$), which indicates that, in contrast with NS firms, auditors charge SCECGs and SCELGs 4.4% and 1.6% lower audit fees, respectively.

The last four columns of Table 2.3 present the results of the propensity-score-matched sample. The study finds that the fee differences between state and non-state-controlled firms are still statistically significant at even higher magnitude (*STATE* Coef. = -0.113; $p<0.01$; *SCECG* Coef. = -0.165; $p<0.01$; *SCELG* Coef. = -0.087; $p<0.05$), suggesting that once the clients' attributes are balanced between subgroups, on the one hand, the results of the full sample are not biased by reverse causality; on the other hand, audit fee reduction effects brought by government CSs are more evident when their demands for audit quality are equal. Overall, results reported in Table 2.3 accept the Hypothesis 1 and indicate that the types of CS have significant influences on audit fees.

Table 2.3 Results of pooled OLS regressions of audit fee on nature of CS

Dependent Variable = *LnFee*								
	Full Sample				**Propensity-Score Matched Sample**			
	(1.1)		**(1.2)**		**(1.3)**		**(1.4)**	
Variable	**Estimated Coefficient**	***t*-statistics**	**Estimated Coefficient**	***t*-statistics**	**Estimated Coefficient**	***t*-statistics**	**Estimated Coefficient**	***t*-statistics**
SCECG			-0.0446***	(-4.39)			-0.165***	(-3.71)
SCELG			-0.0155**	(-2.04)			-0.0869**	(-2.37)
STATE	-0.0244***	(-3.45)			-0.113***	(-3.14)		
LnASSET	0.276***	(47.32)	0.276***	(47.23)	0.391***	(14.56)	0.397***	(14.82)
MOpinion	0.0830***	(4.95)	0.0818***	(4.88)	0.151*	(1.81)	0.129	(1.53)
LagDays	0.00155***	(10.78)	0.00153***	(10.66)	0.000589	(0.75)	0.000549	(0.70)
NEWSHARE	0.000805	(0.11)	0.00102	(0.15)	0.0889***	(2.98)	0.0924***	(3.09)
CROSS	0.718***	(25.99)	0.722***	(25.99)	0.531***	(11.19)	0.533***	(11.16)
MA	0.0330***	(5.15)	0.0328***	(5.12)	-0.00433	(-0.16)	-0.00900	(-0.33)
BIG4	0.607***	(30.64)	0.609***	(30.83)	0.529***	(18.04)	0.532***	(18.39)
ISA	0.0759***	(8.56)	0.0769***	(8.68)	-0.0132	(-0.39)	-0.00723	(-0.22)
AuditCom	0.00220	(0.20)	0.00238	(0.21)	-0.0387	(-0.81)	-0.0418	(-0.87)
Dual	-0.0129	(-1.62)	-0.0138*	(-1.74)	0.0858*	(1.70)	0.0784	(1.56)
BoardIndy	-0.0330	(-0.56)	-0.0363	(-0.62)	-0.0633	(-0.26)	-0.0400	(-0.16)
ACIndy	0.000493	(0.19)	0.000413	(0.16)	-0.0248***	(-2.78)	-0.0257***	(-2.88)
RA	0.0377***	(3.24)	0.0388***	(3.19)	-0.0736	(-0.47)	-0.0202	(-0.13)
IA	-0.0158	(-0.63)	-0.0139	(-0.56)	-0.0123	(-0.11)	-0.0103	(-0.09)
GROWTH	-0.0147**	(-2.33)	-0.0146**	(-2.32)	-0.0329	(-0.83)	-0.0319	(-0.81)
ZSCORE	0.0000891	(0.32)	0.0000914	(0.34)	-0.0148**	(-2.31)	-0.0137**	(-2.17)
TENURE	0.00895***	(6.88)	0.00862***	(6.62)	0.00875	(1.58)	0.00597	(1.07)
INDEPENDENCE	-0.534***	(-8.66)	-0.531***	(-8.60)	-0.227	(-0.55)	-0.179	(-0.44)

VAR	-0.0704	(-1.23)	-0.0718	(-1.26)	5.326**	(2.00)	4.757*	(1.77)
LnMV	0.0671***	(9.38)	0.0686***	(9.57)	-0.0279	(-1.10)	-0.0280	(-1.11)
LEV	0.139***	(7.42)	0.139***	(7.39)	0.0513	(0.39)	0.0816	(0.62)
ROA	-0.186***	(-2.82)	-0.195***	(-2.96)	0.631**	(2.17)	0.605**	(2.08)
LOSS	0.0308**	(2.49)	0.0314**	(2.54)	0.114**	(1.96)	0.123**	(2.10)
ST	0.0867***	(4.85)	0.0874***	(4.89)	0.0552	(0.51)	0.0737	(0.68)
Year Fixed Effect	Included	Included	Included	Included	Included	Included	Included	Included
Industry Fixed Effect	Included	Included	Included	Included	Included	Included	Included	Included
_cons	6.032***	(50.81)	6.007***	(50.51)	5.422***	(8.96)	5.254***	(8.59)
R-sq	0.704		0.705		0.740		0.741	
adj. R-sq	0.703		0.704		0.731		0.732	
N	15288		15288		1370		1370	
Matching Model R-sq					0.371		0.371	

Note:

t-statistics in parentheses. *, **, *** represent significance levels of 0.10, 0.05, 0.01 respectively. See Appendix A for variable definitions.

Estimated coefficients on control variables are generally consistent with predictions. This section highlights only some of the findings here. First, the directions of all audit engagement complexity variables match the expectation with the exception of *NEWSHARE*, which means that a client's demand of future (+2 years) equity financing neither increases engagement complexity nor litigation risk. Second, all four corporate governance control variables show no statistically significant impact on audit fee. This is consistent with prior managerial hegemony perspective literature[31]. On the one hand, despite the importance emphasised by academia and regulators, findings support the argument for the inefficiency and lack of power of audit committees as a corporate governance mechanism (Cohen et al., 2002, Cohen et al., 2010). On the other hand, the insignificance of board independence on audit fee echoes the criticism that the independence of the board, or even corporate governance as a whole, is more about compliance rather than being functional (Kosnik, 1987, Cohen et al., 2008, Kachelmeier et al., 2016); and that this might be even more evident in an environment where information transparency and legal investor protection are weak (Lau et al., 2016). The results can be interpreted from two perspectives. First, it suggests that auditors in China are unlikely to rely on observable corporate governance characteristics to set the price due to the arguably industry-wide perception and experiences towards the 'symbolic' nature of corporate governance. Second, when a CS exists, the 'appearance' of corporate governance might not be that relevant to its effectiveness[32]; rather, the setting is more likely to act as an ally to the CS.

Regarding litigation controls, opposite to the prediction, the coefficient on *GROWTH* is significantly negative. This is because the growth rate in sales also inherently proxies the level of business risk, and its risk mitigation effect overcomes the assumed concern of lagged internal control. In addition, the positive and significant effect of *TENURE* is consistent with the alternative view that auditees tend to pay more following the

31 For more insights, please refer to the work of Cohen et al. (2008) which provides a comprehensive discussion about four theoretical bases widely used in studies regarding corporate governance in the accounting/auditing domain.

32 It should be noted here that the appearance or form of a corporate governance setting refers to observable characteristics, such as expertise, independence, composition etc., which by itself does not necessarily determine the performance of CG. What matters are the actions of directors to fulfil their responsibilities, which generally cannot be observed from outside. It can be illustrated using the example from Cohen et al. (2007) that, although the insider director appears to be nondependent, he/she can provide information on a timely basis which enables the board to act more effectively.

increase in the number of service years, suggesting that audit fee reflects auditor's knowledge and experience spill-over from previous engagements with the client.

These findings suggest that in China, all things being equal, the sole difference of the CS's nature has a significant effect on auditor' risk perception at pre-engagement phase; and, consequently, audit fee. In particular, companies with their CS affiliated to central government pay the smallest amount of audit fee; and firms controlled by non-state entities pay the highest amount; with those ultimately controlled by the local government in the middle. Thus, the Hypothesis 1 can be accepted.

2.4.2 Level of control and audit fee

Table 2.4 Regressions of audit fee on control concentration by type of CS

Dependent Variable = *LnFee*							
	(2.1)	**(2.2)**	**(2.3)**	**(2.4)**	**(2.5)**	**(2.6)**	**(2.7)**
	Full Sample	**Subsample**				**Propensity-Score Matched Sample**	
		STATE	**SCECG**	**SCELG**	**NS**	**STATE vs. NS**	**SCECG,SCELG vs. NS**
	Coef.	**Coef.**	**Coef.**	**Coef.**	**Coef.**	**Coef.**	**Coef.**
	(t-statistics)	**(t-statistics)**	**(t-statistics)**	**(t-statistics)**	**(t-statistics)**	**(t-statistics)**	**(t-statistics)**
VOTING	-0.0615***	-0.145***	-0.0466	-0.171***	0.0472*	0.0205	0.0170
	-0.0205	-0.0307	-0.0593	-0.0361	-0.0283	(0.12)	(0.10)
SCECG							-0.144***
							(-3.25)
SCELG							-0.0810**
							(-2.18)
STATE						-0.102***	
						(-2.81)	
SCECG × VOTING							-0.482**
							(-1.97)
SCELG ×VOTING							-0.452**
							(-2.18)
STATE × VOTING						-0.485**	
						(-2.45)	
LnASSET	0.275***	0.302***	0.299***	0.302***	0.257***	0.391***	0.397***
	-0.00578	-0.00904	-0.0163	-0.0108	-0.00779	(14.85)	(15.03)
MOpinion	0.0843***	0.0726***	0.0952**	0.0525*	0.0998***	0.111	0.0956
	-0.0167	-0.0256	-0.0472	-0.0296	-0.0207	(1.33)	(1.13)
LagDays	0.00158***	0.00165***	0.00207***	0.00125***	0.00133***	0.000501	0.000463

	-0.000144	-0.000215	-0.000417	-0.000252	-0.000193	(0.64)	(0.58)
NEWSHARE	-0.000173	0.00598	-0.0137	0.0117	-0.00967	0.0916***	0.0945***
	-0.00696	-0.0103	-0.0187	-0.0123	-0.00933	(3.05)	(3.15)
CROSS	0.715***	0.762***	0.775***	0.742***	0.445***	0.526***	0.528***
	-0.0276	-0.0316	-0.0421	-0.0459	-0.0617	(11.24)	(11.14)
MA	0.0341***	0.0394***	0.0512***	0.0343***	0.0266***	-0.00588	-0.0100
	-0.00639	-0.00939	-0.0172	-0.011	-0.00875	(-0.22)	(-0.37)
BIG4	0.610***	0.591***	0.542***	0.628***	0.655***	0.534***	0.537***
	-0.0198	-0.0235	-0.0392	-0.0278	-0.0408	(18.34)	(18.63)
ISA	0.0766***	0.0971***	0.0972***	0.105***	0.0435***	-0.0130	-0.00793
	8.66	7.36	4.17	6.72	3.79	(-0.39)	(-0.24)
AuditCom	0.000997	-0.00289	-0.0707**	0.0192	0.00607	-0.0390	-0.0410
	-0.0111	-0.0165	-0.0293	-0.0195	-0.0147	(-0.82)	(-0.85)
Dual	-0.00877	-0.018	0.0399	-0.0423**	-0.00866	0.0610	0.0558
	-0.00784	-0.0155	-0.0343	-0.0171	-0.00921	(1.23)	(1.13)
BoardIndy	-0.019	0.011	0.497***	-0.168	-0.0872	-0.0538	-0.0357
	-0.0587	-0.0913	-0.164	-0.11	-0.0767	(-0.22)	(-0.14)
ACIndy	-0.000516	0.00229	-0.00596	0.00533	-0.00323	-0.0258***	-0.0265***
	-0.00259	-0.00359	-0.00646	-0.00423	-0.00372	(-2.91)	(-2.98)
RA	0.0396***	0.240***	-0.0226	0.523***	0.0177***	-0.0584	-0.0145
	-0.0117	-0.0692	-0.0492	-0.0588	-0.00444	(-0.37)	(-0.09)
IA	-0.00899	-0.0497	-0.0499	-0.00756	0.0143	-0.0124	-0.0114
	-0.0248	-0.036	-0.0712	-0.0412	-0.0321	(-0.11)	(-0.10)
GROWTH	-0.129***	-0.148***	-97.31***	-0.221***	-1.543	-0.0250	-0.0246
	-0.0346	-0.032	-33.36	-0.0319	-0.958	(-0.62)	(-0.62)
ZSCORE	0.000108	-0.00086	0.000524	-0.00186**	0.0000783	-0.0153**	-0.0145**
	-0.000271	-0.000636	-0.000478	-0.000729	-0.000242	(-2.44)	(-2.32)

TENURE	0.00865***	0.00688***	0.0147***	0.00410**	0.0120***	0.00826	0.00595
	-0.00131	-0.00182	-0.0038	-0.00209	-0.00197	(1.52)	(1.08)
INDEPENDENCE	-0.534***	-0.480***	-0.726***	-0.345***	-0.657***	-0.269	-0.227
	-0.0619	-0.0738	-0.111	-0.0906	-0.105	(-0.65)	(-0.55)
VAR	-0.0862	-0.113	-1.302	-0.0986	-0.127	4.340*	3.922
	-0.0571	-0.0724	-0.823	-0.0763	-0.112	(1.69)	(1.51)
LnMV	0.0683***	0.0492***	0.0412**	0.0675***	0.0916***	-0.0108	-0.0113
	-0.00714	-0.0102	-0.0188	-0.0122	-0.0104	(-0.42)	(-0.43)
LEV	0.129***	0.0493*	0.157***	-0.00218	0.149***	-0.00401	0.0205
	-0.0188	-0.0296	-0.0578	-0.0339	-0.0246	(-0.03)	(0.16)
ROA	-0.194***	-0.158	0.0327	-0.234**	-0.290***	0.550*	0.529*
	-0.0643	-0.0986	-0.195	-0.113	-0.0845	(1.91)	(1.84)
LOSS	0.0310**	0.0306*	0.0928***	-0.000646	0.0463***	0.124**	0.131**
	-0.0123	-0.0179	-0.0346	-0.0209	-0.0163	(2.16)	(2.25)
ST	0.0819***	0.0873***	0.105**	0.0807**	0.0821***	0.0908	0.106
	-0.0178	-0.0255	-0.0412	-0.0316	-0.0243	(0.85)	(0.97)
Year Fixed Effect	Included	Included	Included	Included	Included	Included	Included
Industry Fixed Effect	Included	Included	Included	Included	Included	Included	Included
_cons	6.039***	5.940***	6.401***	5.453***	5.973***	13.21***	13.21***
	-0.118	-0.158	-0.293	-0.194	-0.188	(134.00)	(135.29)
N	15288	7991	2533	5458	7297	1370	1370
R-sq	0.704	0.749	0.809	0.712	0.592	0.744	0.745
adj. R-sq	0.703	0.747	0.806	0.710	0.590	0.734	0.735

Note:

t-statistics in parentheses *, **, *** represent significance levels of 0.10, 0.05, 0.01 respectively. See Appendix A for variable definitions.

For a meaningful interpretation, continuous variables in regression (2.6) and (2.7) are centralised at the respective mean.

In this section, the study examines whether the strength of CSs' control, proxied by the percentage of voting rights held (*VOTING*), contributes to audit fee differentiations. In Table 2.4, regressions (2.1) through (2.5) regress *VOTING* on the natural logarithm of audit fee (*LnFee*) using pooled and subsamples categorised by CS type in order to determine if the control strength's effect on audit fee, if any, differentiates directionally among different types of CS. Equations (2.6) and (2.7) further introduce interactions to test the statistical significance of effect difference between subgroups. For a more meaningful interpretation, in the last two columns presented in Table 2.4, all continuous variables are concertized at their respective means[33].

Columns (2.1) to (2.5) draw a rather interesting picture. Although when using the pooled sample (2.1) without considering the type of CS, *VOTING* (Coef. = -0.062; p<0.01) appears to be significantly negatively related to audit fee; when taking the CS types into account, it shows a different picture. The results illustrate that the voting rights concentrated to state-affiliated CS ((2.2) *VOTING*, Coef. = -0.15; p<0.01) are negatively associated with audit fee, whereas those held by non-state CSs gave a positive impact ((2.5) *VOTING*, Coef. = -0.047; p<0.1). Such directional difference drove by CS type consists with both the incentive and preferential treatment arguments that, in China, auditors perceive state control as a risk mitigating factor; and the effect is directly tied to the strength of control. Moreover, estimated coefficients of *VOTING* in columns (2.3) and (2.4) are -0.047 (p>0.1) and -0.171 (p<0.01), respectively. The insignificant audit fee reduction for SCECGs may be due to the 'strategically crucial' nature of central government-controlled firms (Clarke, 2003) makes their CS the unchallenged controller, no matter what the amount of voting rights appears to be.

In regressions (2.6) and (2.7), the author tests the significance of effect differences between subgroups using the propensity-score matched sample. This study finds negative and significant coefficients on *STATE* (column (2.6) Coef. = -0.102; p<0.01), *SCECG* (column (2.7) Coef. = -0.144; p<0.01) and *SCELG* (column (2.7) Coef. = -0.081;

33 If these variables were not centralized, the estimated coefficients on categorical dummy variables (i.e. STATE, SCECG, SCELG) represent the (predicted) effect differences between testing and reference group in the condition that all other variables equals 0, which is not meaningful. For example, if VOTING, the percentage voting right held by the CS, was 0, then there should not be any categorical variables in the first place, not to mention the implication of coefficients on them, whereas when continuous variables are centralized at a more meaningful value, above restrictive condition (0 scenario) will shift to this value (in this case, mean). It should be noted here that centralization only changes coefficients on categorical dummies and intercepts. All other estimations are not affected.

p<0.05); as well as on interaction terms *STATE×VOTING* (column (2.6) Coef. = -0.485; p<0.01), *SCECG×VOTING* (column (2.7) Coef. = -0.482; p<0.05) and *SCELG×VOTING* (column (2.7) Coef. = -0.452; p<0.05). They all confirm the voting right magnified audit fee reduction brought by government-affiliated CSs relative to non-state-controlled peers is statistically significant. In addition, the magnitudes of relative fee-dropping also match the prediction that each per cent of voting rights held by central government-affiliated CS carries 3% more relative fee discount than that of local government associated counterparts. Moreover, such significance also applies to SCECGs who show otherwise in regression (2.3).

Together, findings suggest that, first, the strength of the CS's control has a magnifying effect on auditor's risk perception and, in turn, audit fee, which confidently accepts the Hypothesis 2. Second, however, the direction of such effect is determined by the types of CS. Specifically, state-controlled firms pay less from each per cent of voting right obtained by their CSs; whereas non-state-controlled counterparts pay more. They are consistent with the incentive and preferential treatment arguments. Third, seeing *VOTING* as a proxy of entrenchment and incentive alignment effects, according to Claessens et al. (2002) and Fan and Wong (2005), the author may conclude that (without considering the two-right wedge) auditors expect that control concentrated to state CSs bring in incentive alignment effect that mitigates audit risk; while voting rights concentrated to non-state CSs are perceived to be an indicator of the entrenchment problem, and thus attract higher audit fee. Finally, results illustrate how easy it is to make a 'false negative' impression (see column (2.1)) without taking the type of CS into consideration.

2.4.3 Control-ownership wedge and audit fee

Since widely existing cross-shareholding in China creates divergences between CS's voting and cash flow rights, in this section, the study tests whether such a two-right wedge contributes to the risk perception variation of auditors and, thus, audit fee.

In Table 2.5, the researcher reports results of regressing audit fee on two-right wedge using pooled and subsamples by the type of CS. First, signs of *VOTING* in columns (3.1) to (3.5) remain the same as reported in regressions (2.1) to (2.5); which confirms that

the auditor's judgement of incentive alignment versus entrenchment effect associated with CS type is retained when the two-right wedge is controlled. Second, negative and significant coefficients on the ratio of cash flow rights over voting rights across pooled and subsamples indicate that disregarding the nature of control, when the CS's level of control (*VOTING*) is settled, a further increase (decrease) in the voting right without (with) corresponding cash flow right leads to an increased (decreased) audit fee. This is consistent with the expectation and the findings of Fan and Wong (2005) that auditors recognise CSs' two-right separation as a risk indicator and adjust their charge accordingly. Regressions (3.6) and (3.7) further introduce interactions *STATE × CV*, *STATE × CV* and *STATE × CV* to test the significance of the difference between state- and non-state-controlled subgroups using propensity-score matched sample. The consistently insignificant estimated coefficients on all interaction terms indicate the inter-group *CV* effect difference is statistically insignificant.

Nevertheless, as discussed, since the two-right wedge might have multiple meanings, further interpretation of results here should exercise great caution. Different from the underlying assumption implied by previous studies that all cases of two-right divergence are the results of intentional arrangements (thus with the intention to use the 'advantage'), the researcher suggests that the *CV* of non-state CSs is a product of the well-designed scheme while the *CV* of state CS is more likely unintentional. This is because non-state CSs are typically active investors with sufficient economic-driven stakes to make an effort to create control leverage for ethical or unethical reasons; and, as a result, the increased two-right wedge leads to stronger entrenchment risk as perceived by auditors. On the other hand, for one, the departure of two-right for state CSs is usually unintentional due to their, relatively, passive attitude and risk-aversion preference. For the other, as pointed out recently by Hong et al. (2017), the strength of external monitoring is a determinant force determining the net gain for consuming private benefits; and, naturally, whether to pursue control leverage at the first place. State representatives, therefore, have rather slim chance (or very high cost) to benefit from such arrangement, given, as discussed, extra monitoring (e.g. NAO audit) they subject to. Taken together, the negative association between *CV* and *LnFee* shown in

regressions (3.2), (3.3) and (3.4) means that audit fee increases with the wearing off of the risk mitigation effects brought by state CSs as the control chain stretches[34].

In summary, the two-right wedge is positively related to the amount of audit fee, and such relationship is not tied to the type of CS. Thus, findings confidently reject null Hypothesis 3, while the interpretation of the underlying mechanism is not conclusive.

34 Two other possible, while practically unlikely, interpretations are: 1. All cases of two-right divergence are results of intentional arrangements, then it can be concluded that such wedge increases audit fee due to auditors' perception towards magnified entrenchment problem. 2. At the other extreme, when all wedges were unintentionally created, the CS should have limited to no effect on the auditee. In this case, the variable CV could actually be a length measurement of control chain. Thus, the statistically significant association should mean that the further remote the CS the higher the fee, which can also be explained by theories such as the free-rider problem, etc.

Table 2.5 Regressions of audit fee on two-right divergence by type of CS

Dependent Variable = *LnFee*							
	(3.1)	**(3.2)**	**(3.3)**	**(3.4)**	**(3.5)**	**(3.6)**	**(3.7)**
	Full Sample	**Subsample**				**Propensity-Score Matched Sample**	
		STATE	**SCECG**	**SCELG**	**NS**	**STATE vs. NS**	**SCECG,SCELG vs. NS**
Variable	**Coef. (t-statistics)**	**Coef. (t-statistics)**	**Coef. (t-statistics)**	**Coef. (t-statistics)**	**Coef. (t-statistics)**	**Coef. (t-statistics)**	**Coef. (t-statistics)**
CV	-0.0682***	-0.0697***	-0.104***	-0.0492*	-0.0498***	0.0668	0.0603
	(-5.20)	(-3.22)	(-2.69)	(-1.88)	(-2.77)	(0.113)	(0.113)
SCECG							-0.155***
							(0.0477)
SCELG							-0.0882**
							(0.0410)
STATE						-0.119***	
						(0.0403)	
SCECG × CV							0.162
							(0.161)
SCELG × CV							-0.135
							(0.141)
STATE × CV						0.00692	
						(0.131)	
VOTING	-0.0382*	-0.126***	-0.0133	-0.161***	0.0581**	-0.369***	-0.333***
	(-1.83)	(-4.10)	(-0.23)	(-4.46)	(2.05)	(0.0876)	(0.0891)
LnASSET	0.275***	0.302***	0.297***	0.302***	0.254***	0.392***	0.390***
	(47.02)	(33.43)	(18.17)	(27.90)	(32.86)	(0.0264)	(0.0269)
MOpinion	0.0827***	0.0702***	0.0979**	0.0496*	0.0991***	0.0905	0.0627

	(4.94)	(2.74)	(2.09)	(1.67)	(4.81)	(0.0864)	(0.0857)
LagDays	0.00157***	0.00164***	0.00205***	0.00123***	0.00133***	0.000426	0.000324
	(10.91)	(7.64)	(4.96)	(4.89)	(6.97)	(0.000793)	(0.000795)
NEWSHARE	0.00219	0.00981	-0.0123	0.0155	-0.00709	0.0939***	0.0968***
	(0.31)	(0.94)	(-0.65)	(1.25)	(-0.77)	(0.0303)	(0.0301)
CROSS	0.719***	0.767***	0.785***	0.745***	0.454***	0.520***	0.518***
	(26.03)	(24.32)	(18.61)	(16.25)	(7.47)	(0.0473)	(0.0481)
MA	0.0340***	0.0399***	0.0511***	0.0351***	0.0267***	-0.00795	-0.00913
	(5.33)	(4.25)	(2.98)	(3.20)	(3.14)	(0.0269)	(0.0271)
BIG4	0.604***	0.582***	0.527***	0.624***	0.644***	0.541***	0.544***
	(30.43)	(24.57)	(13.31)	(22.21)	(16.75)	(0.0296)	(0.0295)
ISA	0.0767***	0.0968***	0.0979***	0.104***	0.0436***	-0.00986	-0.00163
	(8.66)	(7.34)	(4.22)	(6.70)	(3.80)	(-0.29)	(-0.05)
AuditCom	0.00120	-0.00201	-0.0672**	0.0194	0.00715	-0.0353	-0.0393
	(0.11)	(-0.12)	(-2.30)	(1.00)	(0.49)	(0.0482)	(0.0484)
Dual	-0.00735	-0.0155	0.0569*	-0.0445***	-0.00774	0.0677	0.0622
	(-0.94)	(-1.00)	(1.67)	(-2.61)	(-0.85)	(0.0501)	(0.0498)
BoardIndy	-0.00615	0.0150	0.514***	-0.167	-0.0586	-0.0659	-0.0985
	(-0.10)	(0.16)	(3.12)	(-1.51)	(-0.78)	(0.252)	(0.254)
ACIndy	-0.000602	0.00220	-0.00682	0.00543	-0.00371	-0.0255***	-0.0271***
	(-0.23)	(0.61)	(-1.06)	(1.28)	(-1.01)	(0.00893)	(0.00897)
RA	0.0581***	0.243***	-0.0122	0.520***	0.0225***	-0.0667	-0.00444
	(2.62)	(3.50)	(-0.25)	(8.86)	(2.87)	(0.159)	(0.161)
IA	-0.00610	-0.0432	-0.0399	-0.00427	0.0129	0.0141	0.00677
	(-0.24)	(-1.20)	(-0.56)	(-0.10)	(0.41)	(0.111)	(0.112)
GROWTH	-0.0131**	-0.0218**	-0.0128	-0.0228**	-0.00336	-2283.8	-2302.9
	(-2.08)	(-2.21)	(-0.64)	(-1.96)	(-0.42)	(3952.8)	(3933.8)
ZSCORE	0.000121	-0.000859	0.000480	-0.00182**	0.0000823	-0.0143**	-0.0137**
	(0.46)	(-1.37)	(1.00)	(-2.49)	(0.35)	(0.00626)	(0.00623)

TENURE	0.00842***	0.00672***	0.0146***	0.00385*	0.0114***	0.00888	0.00681
	(6.41)	(3.70)	(3.83)	(1.85)	(6.05)	(0.00549)	(0.00555)
INDEPENDENCE	-0.536***	-0.481***	-0.730***	-0.347***	-0.651***	-0.250	-0.240
	(-8.69)	(-6.50)	(-6.67)	(-3.82)	(-6.23)	(0.414)	(0.416)
VAR	-0.0694	-0.0936	-1.368*	-0.0761	-0.123	4.676*	4.175
	(-1.20)	(-1.22)	(-1.67)	(-0.90)	(-1.13)	(2.621)	(2.620)
LnMV	0.0687***	0.0505***	0.0462**	0.0676***	0.0926***	-0.0180	-0.0176
	(9.59)	(4.95)	(2.43)	(5.55)	(9.26)	(0.0254)	(0.0253)
LEV	0.124***	0.0506*	0.145**	0.00319	0.149***	0.0117	0.0558
	(6.57)	(1.71)	(2.52)	(0.09)	(6.24)	(0.128)	(0.131)
ROA	-0.172***	-0.121	0.0361	-0.189	-0.265***	0.613**	0.643**
	(-2.62)	(-1.19)	(0.18)	(-1.63)	(-3.14)	(0.287)	(0.288)
LOSS	0.0314**	0.0307*	0.0936***	0.0000739	0.0474***	0.131**	0.143**
	(2.54)	(1.72)	(2.72)	(0.00)	(2.92)	(0.0581)	(0.0582)
ST	0.0843***	0.0926***	0.100**	0.0878***	0.0782***	0.0814	0.0898
	(4.73)	(3.63)	(2.48)	(2.76)	(3.22)	(0.112)	(0.112)
Year Fixed Effect	Included	Included	Included	Included	Included	Included	Included
Industry Fixed Effect	Included	Included	Included	Included	Included	Included	Included
_cons	6.066***	5.983***	6.414***	5.499***	6.038***	13.01***	13.00***
	(51.11)	(37.67)	(21.81)	(28.27)	(32.98)	(0.389)	(0.386)
R-sq	0.705	0.749	0.810	0.713	0.593	0.743	0.744
adj. R-sq	0.704	0.747	0.807	0.710	0.590	0.733	0.735
N	15272	7984	2527	5457	7288	1370	1370

Note:

t-statistics in parentheses *, **, *** represent significance levels of 0.10, 0.05, 0.01 respectively. See Appendix A for variable definitions. For a meaningful interpretation, continuous variables in regression (3.6) and (3.7) are centralised at the respective mean.

2.5 Robustness test

To mitigate the possibility that the results of the propensity-score matched sample are a consequence of the smaller size, the study conducts following robustness tests. First, for the matched sample, the author obtains bootstrap estimates, using 100 repetitions. Second, to rule out the potential bias caused by matching specification, this study constructs a sample using different calliper width (3% (Lawrence et al., 2011) and 0.2 times the standard deviation of propensity score) and with/without replacement. Third, as the matched sample has different auditor compositions to that of the full population, following Lawrence et al. (2011), for each year, the researcher randomly 'trim' matched sample in order to make the ratio of Big4 to none-Big4 observations match that of the corresponding year's full sample. All reported inferences are robust to these alternative specifications.

Moreover, as prior literature (Claessens et al., 2002) documents that there are non-linear relationships between ownership concentration and CS's entrenchment behaviours, the author then adds squared terms of *CV* and *VOTING* and corresponding interactive terms to test potential non-linearity. However, model specification becomes weaker, which indicates that the probability of non-linearity exists in tested relationships is slim to none.

Furthermore, to avoid potential bias raised by ineffective/weak control, cut-off tests on *VOTING* on 10%, 20%, and 30% levels have been performed. All results are materially unchanged.

2.6 Additional tests

2.6.1 The effect of state share proportion

Since identifying the true nature of a client's CS through tracing back the control chain might be difficult at the audit pricing stage, especially when the auditor has no prior experience with the client, it is also possible that auditor judge this nature based a more observable measure. Considering the popularity of control enhancing arrangements (e.g. pyramid shareholding) in China, the proportion of state share within total shares outstanding is more likely to be used by auditors than reported direct shareholding due to the fact that state shares are untradeable in open market; meanwhile the type of shareholder is restricted by law (see Section 1.2.2 for details). Therefore, regression in Table 2.6 replaces state CS dummies by the state share proportion (*SSpct*) in order to reveal whether such a direct measure explain audit pricing in the same way as revealed in main tests.

Table 2.6 Test of effect from state share proportion

Dependent Variable = *LnFee*				
	Full Sample		**Propensity-Score Matched Sample**	
Variable	**Estimated Coefficient**	***t*-statistics**	**Estimated Coefficient**	***t*-statistics**
SSpct	-0.0854***	(-4.42)	-0.148**	(-2.09)
LnASSET	0.274***	(47.30)	0.386***	(14.56)
MOpinion	0.0833***	(4.98)	0.171**	(2.05)
LagDays	0.00158***	(11.04)	0.000792	(1.01)
NEWSHARE	0.000825	(0.12)	0.0957***	(3.14)
CROSS	0.709***	(25.48)	0.540***	(11.31)
MA	0.0325***	(5.10)	0.00316	(0.12)
BIG4	0.600***	(30.21)	0.532***	(18.19)
ISA	0.0761***	(8.58)	-0.0148	(-0.44)
AuditCom	0.00135	(0.12)	-0.0395	(-0.82)
Dual	-0.0105	(-1.34)	0.0969*	(1.93)
BoardIndy	-0.0316	(-0.54)	-0.0895	(-0.36)
ACIndy	-0.000118	(-0.05)	-0.0269***	(-2.99)
RA	0.0379***	(3.18)	-0.0516	(-0.32)
IA	-0.0126	(-0.51)	-0.00649	(-0.06)
GROWTH	-0.0880**	(-2.52)	-3014.4	(-0.76)
ZSCORE	0.0000959	(0.35)	-0.0149**	(-2.32)
TENURE	0.00894***	(6.89)	0.00824	(1.48)

INDEPENDENCE	-0.564***	(-9.00)	-0.237	(-0.57)
VAR	-0.0827	(-1.47)	5.418**	(2.02)
LnMV	0.0681***	(9.48)	-0.0283	(-1.11)
LEV	0.133***	(7.12)	0.0397	(0.31)
ROA	-0.205***	(-3.20)	0.788***	(2.75)
LOSS	0.0308**	(2.50)	0.125**	(2.15)
ST	0.0825***	(4.64)	0.0575	(0.55)
Year Fixed Effect	Included	Included	Included	Included
Industry Fixed Effect	Included	Included	Included	Included
_cons	6.078***	(51.17)	5.488***	(9.10)
R-sq	0.705		0.739	
adj. R-sq	0.704		0.730	
N	15287		1370	

Note:

t-statistics in parentheses. *, **, *** represent significance levels of 0.10, 0.05, 0.01 respectively. See Appendix A for variable definitions.

As shown, the proportion of state share within total share outstanding has a significant negative impact on audit fee, which corresponds to results of main tests that state control reduce auditors' perceived risk; and such effect is positively correlated with the strength/magnitude of state control.

2.6.2 The effect of power balance

Although the study defines CS as the single blockholder with effective control over a listed company, it is still possible that the CS needs to face resistance/challenge from other shareholders. Thus, the study further tests if such power of balance is effective; and can be perceived by auditors. In regressions reported in Table 2.7, the aggregated shareholding percentage of 2nd to 10th largest shareholder (*Pct2to10*) is included to capture the possible effect of "counterweight" in influencing auditors' perception.

Table 2.7 Test of power balance

Dependent Variable = *LnFee*				
	Full Sample		**Propensity-Score Matched Sample**	
Variable	**Estimated Coefficient**	***t*-statistics**	**Estimated Coefficient**	***t*-statistics**
Pct2to10	-0.0139	(-0.54)	0.643	(0.71)
VOTING	-0.0652***	(-3.16)	-0.197**	(-2.29)
LnASSET	0.273***	(46.89)	0.400***	(15.41)
MOpinion	0.0835***	(5.01)	0.0901	(1.06)
LagDays	0.00158***	(11.02)	0.000648	(0.82)

NEWSHARE	0.000317	(0.05)	0.0798***	(2.63)
CROSS	0.709***	(25.25)	0.441***	(9.23)
MA	0.0336***	(5.26)	-0.00499	(-0.19)
BIG4	0.603***	(30.32)	0.540***	(18.59)
ISA	0.0767***	(8.66)	-0.0201	(-0.59)
AuditCom	0.00111	(0.10)	-0.00627	(-0.13)
Dual	-0.00821	(-1.05)	0.0740	(1.48)
BoardIndy	-0.0182	(-0.31)	0.0165	(0.07)
ACIndy	-0.000568	(-0.22)	-0.0250***	(-2.78)
RA	0.0385***	(3.25)	-0.00832	(-0.05)
IA	-0.00875	(-0.35)	-0.0125	(-0.11)
GROWTH	-0.105***	(-3.18)	-2746.1	(-0.68)
ZSCORE	0.000109	(0.41)	-0.0144**	(-2.29)
TENURE	0.00884***	(6.70)	0.00479	(0.87)
INDEPENDENCE	-0.558***	(-8.90)	-0.265	(-0.66)
VAR	-0.0876	(-1.53)	3.780	(1.45)
LnMV	0.0681***	(9.52)	-0.0370	(-1.50)
LEV	0.132***	(7.05)	-0.000851	(-0.01)
ROA	-0.189***	(-2.94)	0.764***	(2.75)
LOSS	0.0305**	(2.47)	0.140**	(2.48)
ST	0.0811***	(4.56)	0.136	(1.27)
Year Fixed Effect	Included	Included	Included	Included
Industry Fixed Effect	Included	Included	Included	Included
_cons	6.087***	(50.92)	5.358***	(9.16)
R-sq	0.704		0.748	
adj. R-sq	0.703		0.739	
N	15287		1370	

Note:

t-statistics in parentheses. *, **, *** represent significance levels of 0.10, 0.05, 0.01 respectively. See Appendix A for variable definitions.

As illustrated in Table 2.7, the second largest source of power shows no significant effect on audit fee indicating, in China, CSs are more likely dominate the board with limited to none effective resistance from other blockholders

2.7 Concluding remarks

This chapter examines the individual and joint impacts of three controlling shareholder attributes, namely the types, the level of control and the control-ownership wedge, on audit fee of Chinese listed companies from 2004 to 2014. The study finds that, compared with non-state-controlled firms, firms ultimately controlled by state asset management agencies pay fewer audit fees. More specifically, after further splitting state-controlling shareholders (CSs) into central and local government groups, results show that the central government-affiliated firms pay the lowest, followed by the local government-affiliated firms and non-state-controlled peers pay the highest, *ceteris paribus*. These audit fee differentiations support incentive and preferential treatment arguments for state CSs as perceived by auditors that state CSs bring stricter ICOFR, more conservative strategy, and lowered business risks to their controlled firms. Moreover, this study finds that the voting rights level of state CS is significantly negatively related to audit fee; whereas that of non-state counterparts is significantly opposite. This suggests that auditors are likely to recognise incentive alignment as the dominant effects introduced by state control, and entrenchment effect as the threat brought by non-state control. The effects of the two-right wedge are constantly positively related with audit fee across full samples and subsamples without significant differences between groups, indicating that a higher level of control-ownership departure of CS leads to higher audit fee, regardless of the CS types.

This study contributes to the understanding of the importance of the controlling shareholder in shaping the auditor's risk perception and eventual pricing decisions. First, the study adds to previous literature that focusses on the control concentration of Asian markets (Fan and Wong, 2002, Fan and Wong, 2005) by introducing the types of control into the 'mosaic'. Empirical results of the joint effects of CS type and voting concentration suggest that, when the two-right wedge is settled, the auditor's reaction (proxied by audit fee) on the CS's voting right concentration is directionally different between state- and non-state-controlled clients, which suggests that auditors expect control concentrated to state CSs to bring in the incentive alignment effect that mitigates audit risk; while voting rights concentrated to non-state CSs are perceived to be an indicator of the entrenchment problem. This implies that previously found relations could vary directionally conditional to the background of CS, and that studies

on ownership concentration without taking such background into consideration might lead to a 'false negative' impression.

Moreover, the negative and significant coefficient found on the relations between the two-right divergence (*CV*) and audit fee across full samples and subsamples presents different insights from the underlying assumption made by Fan and Wong (2002) Claessens et al. (2002) and Fan and Wong (2005) that two-right divergence is the result of intentional arrangements for all the companies. Taking into account the different control incentives for state and non-state CS confirmed by this study; and the extra external monitoring they subject to, results suggest that the two-right divergence of non-state CSs is more likely to be a result of the well-designed scheme which audits perceive as a risk, while the negative association between *CV* and *LnFee* for state-controlled firms suggests that audit fee increases with the wearing off of the risk mitigation effects brought by state CSs as the control chain stretches.

Second, this chapter extends the literature on the role of different corporate governance mechanisms, such as state control, internal audit committee, and board independence, which also has policy implications on corporate governance reforms. Although state control has long been criticised as hindering effective corporate governance regarding economic outcome maximisation (Shleifer and Vishny, 1997), results suggest that it is perceived as positive in terms of risk mitigation, at least, as far as the auditors are concerned. This indicates that there could be no 'universal value' judging the effectiveness of corporate governance as most literature implied; instead, it depends on the observer's angle of view. Moreover, results suggest the ineffectiveness of internal audit committee and board independence, which calls for more debate and research on the rationale of corporate governance reform schemes. In fact, findings of this Chapter, to some extent, echoes Kuo et al. (2014) and Xiao (2015) who found more aggressive earnings manipulation following NTR reform, that when legal protection is insufficient, state control could still be necessary for mitigating some corporate governance concerns. Thus, results could help policymakers to understand the influence brought by state involvement and/or blockholder in general.

Nevertheless, due to data limitations, the author can proportionally separate neither the effects from the CS's incentive effect and political influences nor the motivation

behind the voting and cash flow right separation of each case. Thus, the author calls for future research into these issues.

Chapter 3

Stakeholders' Learning Curve of Hedge Fund Activism: Evidence from Audit Pricing

Chapter 3 Stakeholders' Learning Curve of Hedge Fund Activism: Evidence from Audit Pricing

Abstract

Using a proprietary dataset of hedge fund activists together with 2002-2014 SEC 13D(/A) filings, this chapter examines the impact of hedge fund activism (HFA) on risk perception of auditors, proxied by audit fee. It is proposed that there should be a 'learning curve' for stakeholders to recognise long-term benefits brought by this new wave of shareholder activism. Consistent with expectations results show that, relative to those of matched controls, audit fee for HFA-targeted companies exhibits no differences pre-intervention; however, these differences increase significantly in the first three post-intervention engagements, followed by a fall back to the fifth post-event year. Moreover, findings suggest the post-intervention fee drop is negatively associated with the auditor-HFA experiences/encounters. Findings also rule out the alternative explanation that these fee dynamics result from changes of the firm's fundamentals. Taken together, the results suggest that policymakers should not be urged to tighten regulations on HFA but instead allow more time for the community to be understood.

Keywords: *hedge fund activism; shareholder activism; corporate governance; ownership structure; audit pricing; audit fee; audit risk.*

3.1 Introduction

> '… these hit-and-run activists whose goal is to force an immediate payout no matter how much it discourages and distracts management from pursuing strategies that would add the most long-term value for the company…'
>
> - Hillary Clinton, 2015

The effect of hedge fund activists (HFAs hereafter) on their portfolio companies has become rather topical as a result of high-profile cases[35] that attracted public criticism in recent years. However, empirical evidence appears to be biased towards a positive stance on what is, arguably, such a controversial concept. Nevertheless, accompanied by the uncertainties brought by any new breed of investor activism, it is hard to believe that it attracts consistent perceptions marketwise. Therefore, it is important to understand market participants' initial and consequential reactions towards HFA if we are to improve our knowledge and address the practical question of whether tightening relevant regulation[36] is beneficial.

Using a proprietary dataset of hedge fund activists along with 13D and 13D/A filings of Securities and Exchanges Commission (SEC) from 2002 to 2014, this study examines auditors' perceptions over the uncertainties brought by HFA intervention and the dynamics of such perceptions following HFA's involvement in corporate operations at the post-intervention stage. This study is motivated by the rise of HFA and audit fee quotation as an informative risk indicator. HFA has spiked almost hyperbolically during the last decade due to context changes such as the sharp decline of staggered boards, the rising power of proxy advisors and new tactics to defeat corporate defences (see Coffee Jr and Palia, 2016 for detailed discussion). Although recent studies conclude that HFA successfully promotes short- and long-term improvements in the target firm's corporate governance, business policies, innovation, and financial performance (Brav

35 For example, see Tsagas (2014) for the case of Cadbury Schweppes' restructure of businesses. see Sudarsanam and Broadhurst (2012) for the case of Deutsche Boerse's withdraw offer to (merger) London Stock Exchange in 2005.

36 See Watchtell, Lipton, Rosen and Katz's (2011) petition for rulemaking under section 13 of the Security Exchange Act of 1934.

et al., 2008b, Brav et al., 2009, Klein and Zur, 2009, Boyson and Mooradian, 2011, Cheng et al., 2012, Bebchuk et al., 2015, Brav et al., 2016b), this study contends that interventions of this new breed of investor activism are associated with a 'learning curve' of stakeholders. In the context of external audit, this chapter proposes that HFA interventions introduce uncertainties, which increases audit fee initially as a result of auditors' increased perceptions of risks, whereas, as understanding of the HFA increases, such extra risk premium should be reduced over time and eventually drop back to a normal level.

HFA actively agitates corporate changes (Klein and Zur, 2009, Katelouzou, 2012), but the outcome of such changes cannot be observed/guaranteed *ex ante*. These proposed reforms increase perceived litigation risks, which refers to the expected present value of possible future loss caused by litigation against the auditor (Stice, 1991, Krishnan and Krishnan, 1997). This perceived risk has to be offset with additional substantive audit procedures that increase audit investments and, therefore, fees (Stice, 1991, Houston et al., 1999, Houston et al., 2005). Furthermore, the residual litigation risk that cannot be mitigated by extra audit investments may increase following the intervention. Brav et al. (2008b) and Clifford (2008) document that the revealing of a HFA's investment in a target firm leads to large abnormal returns. With the increased variability of auditees' stock return, auditors face the risk of lawsuits from investors who may suffer loss, regardless of audit accountability (Pratt and Stice, 1994). Moreover, HFA may also increase auditors' exposure to non-litigation risk (Houston et al., 2005) by impairing their ability to gain future revenue from target firms. As suggested by Cheng et al. (2012), HFAs tend to closely monitor target firms themselves. Therefore, auditors may face threats of auditor ratification and/or lose future non-audit service (e.g., tax advisory) revenue, which is likely to result in increased audit fee as a compensating measure (Houston et al., 2005).

The initial defensive stance of auditors in HFA intervention, though, might be recalibrated over time as a result of auditor's knowledge spillover from previous experiences in dealing with the specific HFA, eventually leading to audit fees falling back to normal levels. Alongside return maximization, HFAs not only have strong incentives to improve the monitoring aspect of target companies' corporate governance (Cheng et al., 2012, Cheng et al., 2015), but also have more active and effective mechanisms to achieve successful monitoring improvement (Brav et al.,

2008b, Klein and Zur, 2009), which fundamentally decreases control risk and audit investments. This study therefore further proposes that auditor's initial risk expectation hike will ease off following engagement with the growth of knowledge regarding the positive impact of HFA intervention, which drives the risk premium downward.

Following prior literature (Brav et al., 2008b, Klein and Zur, 2009, Greenwood and Schor, 2009, Cheng et al., 2012, Cheng et al., 2015), this study uses HFAs' Scheduled 13D filing as the initiation of activism and collect a sample of 2,608 HFA events from fiscal years 2002 to 2014. The natural logarithm of audit fee is the primary audit pricing measurement in this study. Following Lawrence et al. (2011), the propensity score matching (PSM) method is then used to construct a paired sample to mitigate endogeneity concerns of HFA's targeting decisions and market-wide trends in audit fee. The matching process predicts the odds of becoming a HFA target in the next year by a logistic regression as specified by Brav et al. (2008b) and uses the fitted value to match each target firm with an untargeted firm that has the closest propensity score and is in the same industry. To further capture changes, this study employs a more robust version of difference-in-differences adjustment as per Cheng et al. (2012) by subtracting the corresponding value for the matched firm from that for the target firm. In the univariate analysis, it is observed that no significant differences in audit fees paid at pre-event year between target and control firms. However, although target firms pay significantly higher fees for the year of engagement, they pay less for the first through the fifth post-intervention year, which is consistent with the expectation that auditor's risk perception towards HFA-intervened clients follows a learning curve.

One important premise of the hypothesis is that audit fee changes following activism initiation are driven by direct impact on risk premium, rather than by indirect effects arising from HFA promoting reforms on auditees' fundamentals (e.g., spin-off assets) that determine audit investments/efforts. To eliminate such alternative explanation, this study includes a set of variables in multivariate tests to control for fee determinants that could be influenced by HFA. Results reveal that, first, audit fee increases immediately after the HFA intervention, and the increase persists in the first and second post-event years. Second, the fee-increasing trend disappears from the third year following the intervention. Following test then shrinks the event window to [+2, +5] and find a significant fee decrease on the third post-event year, followed by a

flat audit fee level until the end of the event window. Next, the study examines the cause of the fee drop within the event window [+2, +5] and find that the audit fee amount is significantly negatively correlated with the auditor's past experiences in dealing with the HFA involved (through auditee). Taken together, these results are in accordance with the theory that auditors charge extra risk premiums, reflecting initial concerns of future uncertainties, which then decrease as knowledge of the HFA is assimilated.

This chapter also concludes several additional analyses to solidify primary findings. An alternative explanation for results is that changes in audit fee are driven by *ex ante* litigation and non-litigation risk factors, rather than future uncertainties as this study suggests. Adding interaction terms between event year dummies and modified audit opinion (change in non-audit fee), test finds similar post-event fee trend to that observed in the main test, suggesting prior results are not driven by *ex ante* risks. Further, previous demand-side audit pricing studies interpret audit fee as a result of clients' demand of external monitoring (e.g. O'Sullivan, 2000, Carcello et al., 2002, Abbott et al., 2003 etc.). Thus, a concern with finding is that demand could be a major force influencing audit fee. To address such concern, additional tests interact event year dummies with changes in audit committee size (change in board size). Findings indicate that these board characteristic changes following intervention have no statistically significant correlation with audit fee, which reject the demand-driven explanation.

This study contributes in several aspects. To the best of the author's knowledge, this research is the first to illustrate the dynamics between HFA intervention and audit fees, which contributes to the auditing literature on the influence of ownership structure on audit pricing. Second, this study deepens our understanding of the effects of HFA intervention through a transitional view. Specifically, on the one hand, this study illustrates that even highly sophisticated market practitioners as auditors may experience a learning curve towards the new burst of HFA due to initial concerns originating from unknown. On the other hand, this chapter finds that, over time, the initially perceived uncertainty does ease as understanding increases; this finding supplements and supports extant HFA literature. Fundamentally, findings provide a possible explanation for the gap between the negative public reaction and positive empirical evidence towards HFA intervention, which helps to answer the practical question of whether HFA warrants any legislative/regulative response (Brav et al.,

2008b) from another fresh angle. Based on revealed evidence, this study calls for a more cautious response to regulatory proposals. Although anecdotal stories caused public concerns of uncertainties (Brav et al., 2008b), such uncertainties, from auditors' experience, will be eventually eliminated by information and time. Rather than being pressured by the negative public reaction to restrict HFA, the infant community need more time to be understood.

The remainder of the chapter is organised as follows. Section 3.2 reviews the related literature and develops the hypotheses. Section 3.3 discusses the sample construction process. Section 3.4 presents primary results of the study, while Sections 3.5 and 3.6 report additional tests. Section 3.7 concludes.

3.2 Literature review and hypotheses development

Using audit fee as the primary proxy, this chapter focuses on auditor's reaction to HFA intervention and its involvement in company operations. This study suggests that HFA intervention influences audit fees through introducing uncertainties that increase auditor's perceived risk. Specifically, the intervention affects auditor's perceptions of litigation risk, residual litigation risk and non-litigation risk. Furthermore, such initial risk perceptions decrease in years that follow as a result of improved understanding. Following sections first discusses various ways in which initial intervention leads auditors to perceive higher risks of the prospective engagement and, in turn, potentially increases fees. Then the final section describes the mechanisms of perception transition in the years that follow.

3.2.1 HFA intervention and audit pricing

HFA intervention introduces fundamental changes to target companies by changing their ownership structure. The relationship between risk elements of audit pricing and ownership structure is well established in both official documents and academic research. AS2110 of the Public Company Accounting Oversight Board [PCAOB] (2010b) explicitly prescribes that auditors should acquire an understanding of the companies' attributes that might have a significant impact on the risks of material misstatement, including the company's nature and structure of ownership. O'Sullivan (2000) shows that, among a sample of 402 publicly quoted companies in the UK, the proportion of non-executive directors' shareholding has a significant positive impact on audit fees. In Finland, Niemi (2005) documents that among Big 6 clients, audit hours and fees are lower for companies that are majority-owned by their management; and higher for subsidiaries of foreign companies than for other firms. In Asian markets, Fan and Wong (2005) find that controlling shareholder's voting-cash flow right divergence shows a significant correlation with audit fees.

3.2.1.1 HFA and auditor's perceived risks

At its most basic level, HFA is a variant of hedge fund. Besides common features of hedge funds, HFA has some special traits: (1) pooled, privately organized investment vehicles; (2) administered by professional investment managers who serve as general partners having made a substantial investment and being compensated on the basis of performance; (3) long lock-up periods of at least six months; and (4) not widely available to the public – they actively agitate for changes that will improve returns (Boyson and Mooradian, 2007, Brav et al., 2008b, Brav et al., 2009, Katelouzou, 2012). This 'activist' nature makes their intervention more relevant to risk elements than that of other, passive, blockholders is.

Thomas and L.F. (1999) assert that because auditors tend to associate risk with an uncertain outcome, they perceive higher risk as the variability of outcome increases. While the activism itself may not necessarily be a risk factor, the perceived risks rise as HFA intervention brings uncertainties. Specifically, HFAs are not a homogenous group sharing universal goal and/or tactics (Katelouzou, 2012). Without adequate prior knowledge and experience, auditors may not – and should not – assume that every investor within this community shares the same values and acts in the same way solely based on their common goal of profit-making. Such concerns of uncertainty can be illustrated by a prominent instance of the reverse in strategy of Cadbury Schweppes with HFA intervention (Tsagas, 2014). In March 2007, Trian Funds, a hedge fund controlled by veteran American shareholder activist Nelson Peltz, took a 3% stake in Cadbury Schweppes, and encouraged the management to split up its drinks and confectionery operations (Katelouzou, 2012). Another example from Continental Europe is the rebellion in Deutsche Börse, the German stock exchange operator, where two Anglo-American hedge funds — The Children's Investment Fund (TCI) and Atticus — created an alliance and forced Deutsche Börse to abandon its informal £1.35 billion offer for the London Stock Exchange. The alliance then pressed the chief executive and chairman of the supervisory board to resign (Sudarsanam and Broadhurst, 2012). Although there is no *ex post* evidence to suggest that these 'activism moves' impair shareholders' interests or introduce negative consequences to their auditors, dramatic changes brought by HFA intervention impose a great amount of uncertainty as perceived by auditors.

3.2.1.2 HFA and risk elements of audit pricing model

In the seminal model developed by Simunic (1980), audit fees are described as a function of audit costs (including profit margin; and 'audit costs' hereafter refers to audit investments) and present value of expected future losses caused by auditing current period's financial statements (hereafter referred to as engagement risk). Empirical evidence shows that audit investment reduces engagement risk, and auditors charge clients extra for these additional efforts (Pratt and Stice, 1994, Simunic and Stein, 1996, Karla M. Johnstone and Jean C. Bedard, 2001, Bell et al., 2001).

Houston et al. (1999) argue that the risk elements in Simunic (1980) model referred to by extant research have been largely oversimplified. They suggest that a portion of audit fee reflects risks unrelated to undetected misstatements, which cannot be mitigated through increased investments. Thus, to better identify the causes of risk premiums, Houston et al. (2005) further expand Simunic (1980) and Houston et al. (1999) model, splitting the engagement risk into three risk elements: *litigation* risk, *residual litigation* risk and *non-litigation* risk.

Litigation risk is reflected in the portion of fees that compensates auditors for investing in the audit and bearing acceptable audit risk, which is comprised primarily of potential future loss from litigation[37] coming directly from undetected material misstatement. This is the part that can be mitigated through increased audit investments, such as more effective audit procedures and additional audit efforts (Simunic, 1980, Stice, 1991, Cohen and Hanno, 2000, Bedard and Johnstone, 2004, Cohen et al., 2008, Greiner et al., 2017). Residual litigation risk refers to the present value of possible future losses associated with litigation against auditors for reasons unrelated to audit efforts. In other words, this is the litigation risk that cannot be minimised via further audit investment. Such risks arise, for example, when additional auditing cannot protect auditors from being held responsible for capital provider losses caused by client financial failure or dramatic drops in the client's stock price, which exceeds the scale of statutory audit (Stice, 1991, Carcello and Palmrose, 1994). Meanwhile, non-litigation

37 This is the only portion implied by audit standards as negative consequences are usually coming in the form of lawsuits — prior research suggests that auditors increase fees when business risk stems from fulfilling professional responsibilities.

risk extends beyond litigation and residual litigation risks including any risk unrelated to litigation but may result in either fee premiums or discounts. For example, during the pricing process, auditors may consider opportunities for future audit and non-audit revenues [38] ; and/or potential reputational damage and, consequently, future profitability loss caused by prospective engagement[39] (Houston et al., 2005).

HFA intervention and litigation risk. When HFA intervention occurs in the current fiscal period, the most obvious influence to the auditor is the complexity brought by the newly introduced blockholder, which requires increased audit investment for tasks from risk assessment to analytical procedures (Cohen and Hanno, 2000, Cohen et al., 2002). More importantly, unlike those passive blockholders, HFAs agitate immediate and/or future changes after the intervention, which essentially 'injects foreign objects' into the target company. As a result, the intervention boosts inherent and control risk upwards and eventually drives up audit investment and fees. That is, despite claimed improvements of corporate governance, business strategy and/or future performance, without clear and realized outcomes as well as knowledge spillover from previous experiences with the given HFA, additional risks associated with these new uncertainties have to be compensated for by extra audit efforts to achieve the adequate level of assurance and avoid future litigation results from undetected misstatement. Consequently, auditors charge higher fees for the extra audit efforts.

HFA intervention and residual litigation risk. Additional litigation risks associated with HFA intervention may well exceed the portion that can be mitigated by increased audit investments (Houston et al., 2005). This is because some common post-event changes brought by HFAs are associated with risk factors that are linked to potential lawsuits even if the nature is unrelated to auditors' responsibility. It is documented that auditor's likelihood of attracting litigation is significantly associated with factors that pre-exist; and are independent from audit, such as client's market value and variability of abnormal stock return (Stice, 1991). The possible rationale behind this

38 A fee discount (i.e. lowballing), for example, may arise if auditors believe that conducting the audit will allow them to earn significant audit and/or non-audit revenues. Higher audit fees may result when auditors have doubts about opportunities for future revenues or a client's ability to pay audit fees.

39 Financial statement users rely on an auditor's reputation as an indication of financial statement quality and credibility. Prior research suggests that auditors with superior reputation (e.g., Big N) charge higher fees, which some interpret as rent on the auditor's reputation.

phenomenon is that plaintiffs seek compensation from 'deep-pocket' defendants – auditors in this case – regardless of the relevance when bankruptcy impedes other available resources to them. Within the context of HFA intervention, empirical evidence (e.g., Brav et al. (2008b)) suggests that a HFA's investment in a target firm as revealed by Scheduled 13D filing results in large abnormal returns and increased market value. This study conjectures that such burst in return volatility and firm market value will, at least initially, increase auditor's perceived likelihood of being held liable for stakeholder losses, even if the auditors are not directly responsible. HFA intervention could, therefore, lead to an increased portion of audit fees that related to residual litigation risk.

HFA intervention and non-litigation risk. Moreover, HFA intervention introduces two-fold non-litigation risks to auditors. On the one hand, HFA may impair the auditor's ability to gain further revenue from the client through executing shareholder's right of auditor ratification or contributing their professional expertise. Specifically, the Advisory Committee on the Auditing Profession (ACAP, 2008) recommends all public companies holding annual shareholder ratification to vote for the external auditor. This recommendation is based on the belief that auditor ratification would increase the audit committee's oversight of the auditor, and allow shareholders to express their views on the auditing function. Despite having long been argued as 'a kind of formality: non-binding and routine' (Pakaluk, 2013), the activist nature of HFA might make ratification a real threat. On the other hand, it is suggested that HFA tends to actively and closely monitor target companies themselves (Cheng et al., 2015); therefore, the possibility that the client switches to lower-priced alternative auditor can be reasonably assumed. Moreover, empirical evidence of Cheng et al. (2012) indicates that post-event tax avoidance improvement of target firms is a direct result of a HFA's knowledge and experiences of implementing tax changes. Considering tax advisory as one of a few non-audit services that auditors are allowed to provide to the auditee[40], the auditor is prone to face the loss of tax service revenue. Thus, potential loss associated with HFA is likely to result in increased audit fee as a measure of compensating (Houston et al., 2005).

40 The Sarbanes-Oxley Act of 2002 (SOX) prohibits auditors from providing specific non-audit services to an audit client and its affiliates. Tax service is excluded but subject to audit committees' pre-approval.

Collectively, HFA intervention increases auditors' overall risk perception and audit fee via its influences on litigation risk, residual litigation risk and non-litigation risk. These influences may be further magnified by auditors' lack of experiences/knowledge and HFA community's irregularity. In particular, HFAs are a new breed of activists, which did not burst onto the scene until the early 2000s; and the HFA is a very small community that only accounts for 1.1% of the number of hedge funds in the US (Katelouzou, 2012), not to mention the proportion within all types of equity investors. Thus, despite being a group of the most sophisticated practitioners, auditors, presumably, still have very limited experiences with and insights on HFAs, which can be expected to drive their perceptions of risks upwards. Furthermore, HFAs are highly unregulated with controls solely concentrated within the hands of fund managers. Thus, it is difficult for auditors to predict changes and corresponding consequences brought by specific HFA without substantial audit procedures. As a result, the intervention of HFA brings further uncertainties and risks to the target firms' operations, leading to increased auditors' perceived risk and audit fee. The discussion leads to the following hypothesis:

Hypothesis 1: Firms targeted by hedge fund activism pay higher audit fee immediately after the activist event, *ceteris paribus*.

3.2.2 Risk recalibration over time

'Risk arises from the lack of information; certainty grows from information' (Thomas and L.F., 1999, p. 127). Similarly, the effects of HFA intervention on audit fee largely stem from and are magnified by auditors' lack of experience and knowledge. Such defensive perceptions may be recalibrated over time as knowledge spillover (from the previous fiscal year), and outcome of changes become clearer. Following the empirical evidence supporting positive effects of HFA intervention (Brav et al., 2008b, Brav et al., 2009, Katelouzou, 2012, Boyson and Mooradian, 2007, Cheng et al., 2012, Cheng et al., 2015), this study expects auditor's risk perception and audit fee to fall back to normal (even decrease) in the years following the burst immediately after the initial intervention.

First, alongside return maximisation, HFAs also have strong incentives to improve the monitoring aspect of target companies' corporate governance (Cheng et al., 2012, Cheng et al., 2015), which fundamentally decreases audit investment and residual litigation risk and, eventually, audit fees. Compared with individual shareholders, HFAs have stronger incentives to engage in costly monitoring activities since they are less susceptible to the free-rider problem (Grossman and Hart, 1980, Gillan and Starks, 2007). Also, from an individual perspective, fund managers' pay depends largely on their funds' absolute returns (Kahan and Rock, 2007, Boyson and Mooradian, 2007, Brav et al., 2008b, Brav et al., 2009), so they have stronger compensation incentive to safeguard their investment from the firm's misstatement and reputational damage caused by scandal (Boyson and Mooradian, 2007). Further, unlike other types of institutional blockholders, hedge funds are largely unregulated and are not subject to the 'prudent person rule', which allow them to accumulate a large stake in an individual company (Boyson and Mooradian, 2007, Clifford, 2008). Therefore, they have strong incentives to undertake monitoring activities to improve the performance of the target companies. In addition, hedge funds are less likely to have business relations with target companies since they do not sell products or services (Kahan and Rock, 2007). Therefore they have fewer conflicts of interest and are less likely to compromise monitoring (Boyson and Mooradian, 2007). For example, certain types of entrenchment concerns commonly raised from ownership concentration, such as self-dealing, are not relevant to HFA.

On the other hand, different from passive shareholders, HFAs do not just have incentives, but also the ability to achieve successful monitoring (Brav et al., 2008b, Klein and Zur, 2009). HFAs have relatively high percentages of ownership and can use leverage and derivative instruments to obtain beneficial ownerships or voting rights (Hu and Black, 2006). Therefore, they can exercise their shareholder rights to nominate and elect board members (Briggs, 2007, Klein and Zur, 2009). They can also cooperate with other institutional investors, through proxy fight, to make their initiation successful (Briggs, 2007, Brav et al., 2008a, Sudarsanam and Broadhurst, 2012). HFAs can even acquire the target firm if their demands are not met (Cheng et al., 2012). Further, HFAs could pressure individual managers by communicating with the board and other top managers, seeking to remove the managers, publicly criticising the company, filing formal shareholder proposals, launching a proxy fight, and even filing

a lawsuit against the company (Brav et al., 2008a). Additionally, HFAs' concentrated portfolio allows them to focus their time and efforts on target firms.

With strong incentive and effective mechanisms to improve the monitoring aspect of target firms' corporate governance, HFAs' post-event involvement in improving corporate operations may be eventually recognised by auditors. This chapter, therefore, tests following hypothesis:

Hypothesis 2: Post-event audit fee paid by target firms eventually revert to the pre-event level after a short period of burst, *ceteris paribus*.

3.3 Sample construction

3.3.1 HFA data collection

Following prior literature (Brav et al., 2008b, Cheng et al., 2012, Cheng et al., 2015), the author collects HFA data based on Scheduled 13D and 13D/A filings. The 1934 Security Exchange Act requires investors who intend to influence a firm's management to file the Scheduled 13D form with the SEC within ten days of acquiring 5% or more of any type of securities of a listed company. If there are any material changes since the first filing of Scheduled 13D, Scheduled 13D/A must be subsequently submitted.

115,891 13D and 13D/A records[41] between January 2001[42] and July 2017 are first downloaded from SEC EDGAR. Second, the study identifies target (security issuer) firms by linking their CIK to a more permanent identifier – 'gvkey' [43]; and then pinpoints target firms' fiscal year in which a filing date is included. Third, based on a comprehensive list of HFA events kindly provided by Professor Alon P. Brav, the dataset is further filtered[44] so that only filings filed by HFAs are retained. Then, for each

41 The 115,891 retained records exclude those from which the Python-based parser cannot capture issuer's or purchaser's CIK and share percentage.

42 This study sets such cut-off in order to minimize the effects of the Sarbanes-Oxley (SOX) Act on audit and corporate governance in general.

43 CIK is known for its volatility, which renders identifying form fillers throughout time prone to information/observation loss. Thus, in this study, multiple layers of matching logic are applied whenever linking filing originate data, including shareholder activism and audit fee data, with other datasets. Specifically, first, the author matches CIK from filings to header (current) CIK from COMPUSTAT; for no matches, the author maps CIK to GVKEY-CIK link table from WRDS SEC Analytics Suite (the author only uses type-2 and type-3 links for accuracy). Then, for no matches, the author further constructs groups with matching annual total assets and sales within upper and lower 1% tolerances. It is deemed a match if there is only one pair of identifiers without unmatched fiscal data in a group. If a group has one pair of identifiers but a single unmatched piece of fiscal data, the ticker symbol needs to be the same, or the 'distance' of the company names needs to be lower than 10 for it to be recognized as a matched pair. If a group has two or more pairs of identifiers, the author relaxes the criterion and require assets and sales to be matched for at least two continuous years before it can be recognized as a valid match. The author drop the rest.

44 Professor Brav's list contains HFA event from 1994 to 2014 – please refer to Brav et al. (2008a) for a detailed description of data collection. The original list identify HFAs based on their 'natural identity' (fund name etc.), based on which, for each event, the author manually traces back the original filing in SEC EDGAR to obtain the CIK of the HFA at the event date; and then further trace all CIK variances of the HFA through time. The author identifies and filters HFA filings in 13D&13D/A datasets according to the CIK list. Therefore, reported number of HFAs in this section is greater than in prior studies using Professor Brav's list. However, empirical results will not be affected. It should be noted here that the original list is event- rather than HFA identity based because automated transaction, arbitrage etc. must

target firm at each fiscal year, HFA ownership is calculated as the percent shareholding reported in the latest 13D or 13D/A filing preceding the fiscal year-end. In the case when multiple HFAs are involved, this study recognises the shareholding as their latest sum[45], considering that collaboration is a common tactic employed by HFAs (Briggs, 2007, Brav et al., 2008a, Sudarsanam and Broadhurst, 2012). In addition to HFA data, this study obtains financial data from COMPUSTAT, daily share price/return data from CRSP, institutional ownership data from Thomson Reuters' 13F database, analysts' coverage data from I/B/E/S and audit fee data from DEF 14 filings in SEC EDGAR.

Table 3.1 Sample selection

	Number of events	Number of firms	Number of HFAs
HFA events during 2002–2014 with non-missing/matched gvkey and permno for target firms	2608	1774	574
Restrictions:			
After removing events if the target was targeted previously	1948	1948	520
After removing events if the HFA shareholding dropped below 5% by the end of Year0	1292	1292	484
After removing observations without required fundamental data of fiscal Year0	1114	1114	447
After removing observations without fiscal Year0 audit fee data	1031	1031	424
After removing observations without required fundamental data of fiscal Year-1	891	891	384
After removing observations without fiscal Year-1 audit fee data	855	855	325

Notes:

This table presents the initial sample selection and changes in the number of firm-years for target firms. Only firms with at least one year's data in pre- and post-event year are retained. In addition, if

be excluded in order to capture effects of true activism (Brav et. al., 2008a). Thus, in the rest of the sample construction process, the author identifies HFA events according to the original list.

45 For observations without HFA ownership value due to lack of subsequent 13D/As at that year, the author assumes the shareholding does not change; and fills the voids by retaining (longitudinal) last available value.

a firm was targeted multiple times during the sample period, only the first activist event was retained. This study also drops firm-years in which hedge fund activists have exited.

Following Cheng et al. (2012), this study undertakes a series of sample screening steps and report the process in Panel A of Table 3.1. Initially, the process identifies 2,608 events (13D filings) initiated by 574 HFAs between 2002 and 2014[46]. Since proposed theory involves the growth of understanding through time, the study removes events if the issuer was targeted by HFAs previously in order to minimise the effect of knowledge/experience spill-over from prior intervention. This procedure is also consistent with extant studies (Cheng et al., 2012, Cheng et al., 2015 etc.) and further reduces the number of events to 1,948 by 520 HFAs. Moreover, because the research design relies heavily on pre- and post-HFA-intervention comparisons, the author applies two sets of extra restriction. First, the HFA(s) must retain significant ownership (above 5%) of the target firm by the year-end of intervention (Year0). Second, target firms must have at least one year's required data before (Year-1) the intervention and data for the year of intervention (Year0), where Year0 is defined as the fiscal year of the initial Scheduled 13D filing. Data restrictions reduce the sample to 855 events/firms targeted by 326 activist hedge funds.

3.3.2 Propensity score-matching

Audit fees tend to increase over time (Cheffers and Whalen, 2010). Since the hypotheses are about fee changes through time, one might be concerned that increases (if any) in audit fee that the study finds in target firms could be driven by a contemporaneous upward trend market-wide. Additionally, changes in audit fee can result from target firms' *ex ante* characteristics associated with the likelihood of being a hedge fund target (i.e. stock picking effect) (Brav et al., 2008b, Cheng et al., 2012, Cheng et al., 2015). As a result, to control for the potential selection bias and market-wide changes in audit fee, this study uses the propensity score-matching method (see Footnote 30 for a brief discussion of PSM) to construct a

46 The research design requires post-event years in order to form comparisons. The 2002 cut-off allows at least 2001 data as the pre-event reference group; 2014 cut-off of HFA event dataset allows events that occurred within 2014 to have three years' post-event (Year0, Year+1 and Year+2) observations.

sample of control firms, and then apply a stricter version of differences-in-differences (DiD) adjustment as per Cheng et al. (2012).

Specifically, for each target firm, the research identifies a non-target control firm with the closest propensity score in event Year-1. The propensity score is the predicted odds of becoming a HFA target in the next year, estimated using the following logistic regression model as per Brav et al. (2008b),

$$\begin{aligned} D_{Target} = {} & \alpha + \beta_1 LOGMV_{t-1} + \beta_2 TobinQ_{t-1} + \beta_3 Salegrowth_{t-1} + \beta_4 ROA_{t-1} \\ & + \beta_5 LEV_{t-1} + \beta_6 Dividend_{t-1} + \beta_7 RANDD_{t-1} + \beta_8 HHI_{t-1} + \beta_9 Analysts_{t-1} \\ & + \beta_{10} IOR_{t-1} + Year\ \&\ Industry\ Dummies + \varepsilon_t \end{aligned} \quad (3.1)$$

where D_{Target} is an indictor variable set to 1 if the firm is targeted by HFA in year *t*, and 0 otherwise. *LOGMV* is the natural logarithm of market capitalization. *TobinQ* represents Tobin's *Q,* which is measured as book value of debt plus market value of equity divided by the sum of book value of debt and book value of equity. $Salegrowth$ is the growth rate of sales revenue over the previous year. *ROA* is earnings before extraordinary items scaled by lagged total assets. *LEV* is book leverage ratio, calculated as net income plus depreciation and amortization scaled by lagged total assets. *Dividend* is the dividend per share. *RANDD* represents R&D investments scaled by lagged total assets. *HHI* is the Herfindahl-Hirschman index of sales in different business segments. *Analysts* represents the average aggregated quarterly number of analysts following the firm. IOR denotes the fraction of outstanding shares held by institutional investors. This study also controls for two-digit SIC industry- and year-fixed effects to account for industry characteristics and overall economic factors over time. See Appendix B for detailed variable definitions.

Panel A of Table 3.2 reports descriptive statistics for all the variables included in Eq. (3.1). All variables are winsorized at the 1st and 99th percentiles to mitigate the influence of outliers. Panel B presents the results of Eq. (3.1). In line with Brav et al. (2008b) and Cheng et al. (2015), results find that firms are more likely to be a HFA target when they are smaller (*LOGMV*), and have poor market valuation (*TobinQ*), more concentrated business operation (*HHI*), less analyst coverage (*Analysts*) and higher level of institutional ownership (*IOR*).

Table 3.2 Propensity-score-matching

Panel A: Descriptive Statistics for Variables in Equation (3.1)						
Variable	**N**	**Mean**	**SD**	**Q1**	**Median**	**Q3**
$LOGMV_{t-1}$	101139	5.900	2.130	4.360	5.780	7.300
$TobinQ_{t-1}$	82780	2.350	2.600	1.060	1.490	2.490
$Salegrowth_{t-1}$	71497	0.120	0.410	-0.040	0.070	0.200
ROA_{t-1}	72499	-0.010	0.200	-0.020	0.020	0.070
LEV_{t-1}	82902	0.350	0.310	0.050	0.310	0.550
$Dividend_{t-1}$	82811	0.350	0.640	0.000	0.000	0.460
$RANDD_{t-1}$	101277	0.030	0.090	0.000	0.000	0.010
HHI_{t-1}	101277	0.850	0.250	0.730	1.000	1.000
$Analysts_{t-1}$	101277	3.580	5.710	0.000	1.000	5.000
IOR_{t-1}	101277	0.320	0.340	0.000	0.200	0.630

Panel B: Logistic Regression (3.1)			
Dependent variable = D_{Target}			
	Probability of being targeted by HFAs at year t		
	Expected signs	Coefficients	t-stat
$LOGMV_{t-1}$	-	-0.288***	(-9.73)
$TobinQ_{t-1}$	-	-0.095***	(-4.19)
$Salegrowth_{t-1}$	-	-0.037	(-0.41)
ROA_{t-1}	+	0.073	(0.32)
LEV_{t-1}	?	0.215*	(1.86)
$Dividend_{t-1}$	-	-0.263***	(-2.74)
$RANDD_{t-1}$	?	0.852*	(1.70)
HHI_{t-1}	-	-0.254*	(-1.92)
$Analysts_{t-1}$	+	-0.014*	(-1.69)
IOR_{t-1}	+	1.874***	(13.43)
Year-fixed Effects		Yes	
Industry-fixed Effects		Yes	
Constant		-5.913***	(-7.47)
Pseudo R^2		0.072	
Obs.		60957	

Panel C: Matching Result		
Step 1. Matching yield		
Matching criteria: Pscore distance within 0.002 **AND** same industry **AND** same year		
	No. of target firms at Year0	No. of control firms at Year0
Input:	855	NA
Output:	837	837

Step 2. Screening yield

Retaining criteria: each pair has available data at Year 0 and Year-1 **AND** within each pair, both target and control have available data at Year t **AND** within each pair, the HFA's shareholding of the target company has not dropped below 5% by the end of Year t

Event year	No. of targets	No. of controls	No. of valid pairs
Year -1	837	822	822
Year0	837	837	822
Year +1	684	618	614
Year +2	576	472	469
Year +3	472	356	353
Year +4	376	259	256
Year +5	297	187	184
Total			**3520**

Notes:

For each target firm, the study identifies a control firm with the closest propensity score within calliper width 0.002. The propensity score is the predicted odds of becoming a hedge fund activism target in the next year, estimated from the model in Table IV of Brav et al. (2008). Panel A reports descriptive statistics for variables used in PSM. For variable definition see Appendix B. Panel B reports the estimated coefficients for the logit model regression of targeting likelihood. The sample includes all firm-years in [2001, 2016] with required data. Panel C reports sample distribution after the two-step further data screening process.

Year- and industry-fixed effects are also included.

t-statistics reported in parentheses are based on heteroscedasticity robust standard errors.

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

Using the coefficients estimated from Eq. (3.1), the study computes the propensity score for each firm and then identify one matched non-target firm for each targeted firm. Specifically, the study matches two firms in the same year and industry with the closest propensity score within calliper width of 0.002[47], where one has been identified as a HFA target in the previous step, and the other has never been a HFA target[48]. The matching[49] yields 837 target-control pairs at Year0; this matched sample is then

47 Following Austin (2011a), the calliper widths are set to 0.02 times the standard deviation of the propensity score. Since the standard deviation of obtained propensity score is 0.014, a stricter calliper width of 0.002 is used.

48 That is; never appeared as a portfolio company of HFAs in Professor Brav's original list covering 1994-2014.

49 The matching specification allows for replacement of control (i.e. one control can be matched to several target firms). In the final sample, 79 firms serve as controls for two target firms; 10 firms serve as controls for three target firms; and one firm serves as the control for four target firms (729 unique control firms and 822 unique target firms). The author considers this overlap is not significant; and runs (untabulated) main tests without replacements (729 unique control firms and 729 unique target firms). Results show no material differences in terms of significance, direction and general magnitudes of estimated coefficients. The reason why this study chooses to allow replacements is that in the following

expanded to panel data within event window Year-1 to Year+5 (pseudo-event window for controls). However, as reported in Table 3.2 Panel C, data unavailability reduces the number of valid pairs in the final sample to 822 (3,520 observations across the event window). Finally, following Cheng et al. (2012), this study adjusts the value of all variables used in the analyses by subtracting the corresponding value for the matched firm from that for the target firm[50], and use the resulting adjusted values for the empirical analysis unless stated otherwise. Hence, each adjusted variable presented represents the difference between target and control caused by HFA intervention.

test, the study adjusts values of target firms by subtracting corresponding values of controls. Under this scenario, the accuracy of alignment between target and control is at the highest priority; at the same time, whether there were duplicates in controls should have no impact on results. However, allowing replacements can improve the number of observations; and reliability of estimations.

[50] This approach forms a difference-in-differences setting. According to Bertrand et al. (2004) and Lechner (2011), the limitations of this method lie in the fulfilment of its assumptions. However, they are concerns only if DiD was used as a standalone quasi-experimental mechanism, which will be greatly eliminated if employed along with the PSM. This Chapter can be considered fulfilled the three assumptions for the reasons as following. First, for the assumption that intervention allocation should not be determined by baseline outcome, the study added the main dependent variable – natural logarithm of audit fee back to the matching model that yield non-significant effect. This indicates audit fee is not a triggering criteria of HFAs' stock picking. Second, regarding to the assumption that comparison groups should have pre-intervention outcome trend, since the leading audit data provider AuditAnalytics documented a universal tread of both audit and non-audit fees through a seven-year data analysis (Cheffers and Whalen, 2010), it can be seen as fulfilled. Third, in terms of the assumption that the interventions should be as good as random, conditional on time and group fixed effects, the previous PSM step helps to align pre-intervention condition. Meanwhile, the study design employs drastically stricter criteria than what Austin (2011b)has suggested as well as the ones used in previous papers (Cheng et al., 2012, Cheng et al., 2015).

3.4 Empirical analyses

3.4.1 Univariate analysis

Panel A of Table 3.3 presents the univariate analysis of audit fee and fundamentals for target firms surrounding hedge fund activism events. For each variable, panel shows the mean of DiD-adjusted levels from the year prior to the HFA intervention to the fifth year following the event – e.g., Event Year0 is the year of intervention. Generally, for all variables, no significant differences observed between target and control at the pre-intervention year (Year-1) with book-to-market ratio (*BTM*) as the only exception, indicating that previous matching steps successfully aligned *ex ante* conditions. Therefore, empirical results are not likely driven by the HFA stock picking effect.

The results show that audit fee follows a reverse U shape. Specifically, in Year-1, the *LnAuditFee* has an average of 0.062; while the difference is insignificant, indicating there is no statistically significant difference between target and control groups before-HFA intervention. The adjusted value of audit fee in Year0 is 0.118 and significant at the 0.05 level, suggesting an audit fee surge immediately after the occurrence of intervention. As expected, from Year+1 (mean value -0.005 and significant at 0.01) the level of audit fee starts to decrease until the fifth post-event year (Year+5); indicating that audit fees paid by targeted firms are lower than those paid by matched peers. To further rule out the possibility that *ex ante* audit fee level triggers HFA intervention, the study includes *LnAuditFee* in Year-1 to model (3.1) and find (untabulated) that *LnAuditFee* is insignificantly negatively associated with the probability of being targeted. These results provide initial evidence of the hypothesis that HFA intervention induces initial audit fee boost, followed by a decrease over time[51].

With regards to the firm fundamentals, figures show downward trends in the log of total assets (*LnAT*), auditor class difference (*Big4*), institutional ownership (*IOR*) and auditor tenure (*Tenure*) during the post-event period [+1,+5], which correspond the

51 The decreasing trend of audit fee during [+1,+5] could well be driven by the significant post-event decrease of assets (LnAT) – one of the most important determinants of audit fee. Thus, it must be addressed by multivariate test.

trend of audit fee. This reveals that post-event fluctuations in audit fees might be driven by indirect effects arising from variations in firm fundamentals, rather than by direct effects from changes in auditors' perceived risk. This study addresses such concern in multivariate analysis.

Panel B presents the changes in adjusted *LnAuditFee* after HFA events. It shows that auditors charge target firms higher prices than at pre-event level immediately after the activist event ((Year0) – (Year-1)). However, from Year+1 onwards, audit fee becomes lower than its pre-event level; and the trend remains significant throughout Year+2 to Year+5. The Pearson correlations in Panel C of Table 3.3 show that, as expected, *LnAuditFee* is significantly and positively correlated with *LnAT*, *ROA*, *Seg*, *Big4*, *IOR*, and *Tenure*; and negatively correlated with *INVT*, *AR*, and *INDI*. The significant correlations also raise the concern that HFA may indirectly affect auditor fees through its impact on firm fundamentals.

In sum, the univariate analyses support the conjecture that audit fees increase immediately following hedge fund intervention and the change revert shortly after. However, patterns observed here also suggest possible alternative explanations caused by indirect effects, which need to be controlled for in a multivariate framework.

Table 3.3 Changes in audit fee and fundamentals after HFA intervention

Panel A: Changes in Adjusted Value Across Event Window						
Variables (Adjusted Values)	**Year-1**	**Year0**	**Year+1**	**Year+2**	**Year+3**	**Year+4**	**Year+5**
LnAuditFee	0.062	0.118**	-0.005***	-0.049*	-0.194**	-0.132	-0.111
LnAT	-0.057	-0.052	-0.251***	-0.347***	-0.428***	-0.338**	-0.257
ROA	-0.002	-0.030**	-0.024**	-0.010	0.019	-0.006	-0.004
BTM	0.081**	0.035	-0.006	-0.159	-0.428	0.295	-0.005
LEV	-0.010	0.044*	-2.449	0.106**	0.083	0.040	0.072
INVT	-0.004	-0.004	0.004	0.001	-0.001	0.004	-0.009
AR	-0.003	-0.004	-0.002	-0.003	-0.006	-0.004	-0.004
Seg	0.033	-0.008	-0.028	0.004	-0.006	-0.008	-0.038
Big4	-0.007	-0.002	-0.064**	-0.041	-0.105***	-0.066*	-0.038
IOR	-0.017	-0.005	-0.044***	-0.045**	-0.041*	-0.022	0.002
Tenure	-0.014	-0.052	-0.472**	-0.516**	-0.470*	-0.535*	-0.549
INDI	-0.004	-0.003	0.005	0.000	0.009	0.016	0.005

Panel B: Changes in Adjusted Value of Audit Fee						
Changes in Adjusted Value	(Year0) – (Year - 1)	(Year +1) – (Year - 1)	(Year +2) – (Year - 1)	(Year +3) – (Year - 1)	(Year +4) – (Year - 1)	(Year +5) – (Year - 1)
LnAuditFee	0.056	-0.067	-0.111*	-0.256***	-0.194**	-0.173***

Panel C: Pearson Correlations												
Variables (Adjusted Values)		**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
LnAuditFee	A	1											
LnAT	B	0.854***	1										
ROA	C	0.176***	0.259***	1									
BTM	D	-0.021	-0.022	0.010	1								
LEV	E	0.001	-0.007	-0.008	-0.005	1							
INVT	F	-0.106***	-0.119***	0.009	0.016	0.026	1						

AR	G	-0.104***	-0.122***	0.056***	0.016	0.001	0.008	1					
Seg	H	0.320***	0.324***	0.107***	0.002	-0.007	0.016	0.033**	1				
Big4	I	0.586***	0.525***	0.121***	-0.036**	0.027*	-0.082***	-0.096***	0.126***	1			
IOR	J	0.648***	0.722***	0.218***	0.007	-0.027*	-0.123***	-0.134***	0.195***	0.479***	1		
Tenure	K	0.325***	0.337***	0.116***	-0.014	-0.008	-0.072***	-0.053***	0.113***	0.447***	0.270***	1	
INDI	L	-0.304***	-0.261***	-0.035**	0.005	-0.001	0.025	0.048***	-0.047***	-0.335***	-0.249***	-0.129***	1

Notes:

For variable definition see Appendix B.

*, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Panel A reports descriptive statistics of adjusted variables used in the multivariate regressions. This study computes and reports adjusted values that are computed as the differences between the levels of the event firms and the levels of the matched control firms. Control firms are identified as firms that have never been targeted by hedge funds during the sample period, but have the closest propensity scores to target firms, and are within the same industry. The propensity score is the predicted probability of becoming a hedge fund activism target in the next year, estimated from the model (3.1).

3.4.2 Multivariate test

Since HFAs often promote multi-dimensional changes in target firms' fundamentals (Cheng et al., 2012), the activism might indirectly affect audit quotation via altering auditors' planned investments rather than, as the theory suggests, directly influence the risk perception of auditors. For example, as shown in Table 3.3 Panel A, the downward trend of the fee during Year+1 to Year+5 is companied by a simultaneous decrease in assets, which is a common strategy of HFA re-focusing target's business (Brav et al., 2008b). Meanwhile, the correlation matrix reported in Panel C indicates a highly significant (high magnitudes as well) positive correlation between fee and asset level. Therefore, the audit fee changes could be led by variations in firm fundamentals promoted by HFAs, rather than auditors' perceived risk. Acknowledging this possibility, following analyses use a multivariate regression model to control for known audit fee determinants so that variables of interest can better capture the direct effects of HFA on audit fee.

This study estimate Eq. (3.2) to investigate the impact of HFA on audit fee. The sample includes firm-years of target firms from event Year-1 to event Year +5 with required data at, at least, one pre-event year and the year of intervention (Year-1 and Year0). Values of all variables are adjusted by corresponding values of propensity score-matched control firms.

$$\begin{aligned} LnAuditFee_{i,t} = {} & \alpha + \beta_1 Dyear0_{i,t} + \beta_2 Dyear1_{i,t} + \beta_3 Dyear2_{i,t} + \beta_4 Dyear3_{i,t} \\ & + \beta_5 Dyear4_{i,t} + \beta_6 Dyear5_{i,t} + \beta_7 LnAT_{i,t} + \beta_8 ROA_{i,t} + \beta_9 BTM_{i,t} \\ & + \beta_{10} LEV_{i,t} + \beta_{11} INVT_{i,t} + \beta_{12} AR_{i,t} + \beta_{13} Seg_{i,t} + \beta_{14} Big4_{i,t} \\ & + \beta_{15} IOR_{i,t} + \beta_{16} Tenure_{i,t} + \beta_{17} INDI_{i,t} + Industry\ Dummies + \varepsilon_{i,t} \end{aligned} \quad (3.2)$$

The dependent variable *LnAuditFee* is the natural logarithm of audit fee paid to the auditor by given firm *i* in given fiscal year *t*. *Dyear-1, Dyear0*, *Dyear1*, *Dyear2*, *Dyear3*, *Dyear4* and *Dyear5* are dummy variables that equal 1 if the current year *t* is the event Year-1, 0, +1, +2, +3, +4 and +5, respectively; and 0 otherwise. *Dyear-1* is omitted from regression as the benchmark so that a positive (negative) estimated coefficient on above-year dummies indicates increased (decreased) audit fees paid to auditors in corresponding event year relative to those in pre-event Year-1

Model (3.2) includes several audit fee determinant variables that can be part of the business strategies promoted by HFAs, and controlling for these variables could eliminate some indirect effects of HFA on audit fee via changing target firms' fundamentals. Specifically, the natural logarithm of the total asset (*LnAT*) and the number of firms' business segments (*Seg*) are included to control for auditee's size and engagement complexity as a larger client is inherently more complicated (PCAOB 2010b) which, in turn, leads to higher audit fee. Moreover, they are also likely to be affected by intervention; Brav et al. (2008b) report that HFAs usually re-focus the target firm's business strategy by spinning-off noncore assets.

Return on asset (*ROA*), book-to-market ratio (*BTM*) and financial leverage (*LEV*) are included to control for auditee's financial condition (Simunic, 1980, Stice, 1991, Krishnan and Krishnan, 1997, Wang et al., 2008, Lawson and Wang, 2016). From an audit perspective, on the one hand, managers of companies facing financial distress are more likely to window-dress accounting figures (PCAOB 2010b), consequently introducing more errors in their financial statements. On the other hand, stakeholders bearing loss due to a company's poor financial condition are more likely to seek compensation from a 'deep pocket', probably the auditor, by filing a lawsuit regardless of whether the particular cause is audit-related or not. From a HFA's perspective, it is well documented that HFAs prompt profound changes in target firms' operational decisions and capital structure. For example, Brav et al. (2008b) and Boyson and Mooradian (2011) evince that HFA is associated with significant reallocation of capital to more efficient use. In a similar vein, Bratton (2006), Briggs (2007), and Clifford (2008) document that HFAs are successful in improving their target firms' short-term and long-term performance. Therefore, the study includes these variables in the model to rule out the indirect effects of HFA intervention on audit fee through changes in firms' fundamentals.

In addition, the author includes a number of control variables that have been documented to influence audit fee in prior studies (Simunic, 1980, Stice, 1991, Krishnan and Krishnan, 1997, Wang et al., 2008, Lawson and Wang, 2016). Accounts receivable over total assets (*AR*) and the ratio of inventory to total assets (*INVT*) are incorporated in the model. Because these accounts are subject to subjective judgment to determine their value, even a small error in such judgment could lead to the potential of material misstatement being magnified provided its account receivable's balance is

large enough. The tenure of the auditor-client relationship (*Tenure*) is also included. There are conflicting views regarding the impact of tenure on audit fee. A long tenure may decrease fee due to the knowledge spillover of previous experiences with the auditee. However, an opposite effect may be observed as a result of the increased value of auditor's experiences to the auditee. The income-dependence of the auditor on the auditee (*INDI*, calculated as audit fee/total audit fee of all (listed) clients of the auditor in the fiscal year), is included to control for the auditors' proclivity to disclose the discovered error, or even fraud. Craswell et al. (2002) and Kinney et al. (2004) suggest that higher dependence may offer clients greater ability to pressure the auditor into not disclosing negative information. Moreover, the model incorporates the type of auditor (*Big4*), which is a dummy variable that equals 1 if the auditor is one of the Big4 accounting firms[52], and 0 otherwise. Prior studies document that the Big4 are usually associated with a premium. On the one hand, 'deep pocket' theory suggests that Big4 auditors have 'more to lose' in terms of both economic and reputational aspects (DeAngelo, 1981). Thus, they are expected to spend more on staff training and maintaining the quality of teams, which increases per-unit cost. On the other hand, the arguably superior actual and perceivable audit quality enables Big4 to charge a premium (Choi et al., 2008a). Finally, demand-side audit pricing studies usually interpret audit fee increases as a result of client's demand for external monitoring (Carcello et al., 2002, Abbott et al., 2003), and O'Sullivan (2000) documents that the institutional blockholding drives the demand and fee upward. Accordingly, the institutional shareholding ratio (*IOR*) is included as an explanatory variable. See Appendix B for detailed variable definitions.

52 The study also changes the Big4 to Big5 by including Grant Thornton; and re-run all tests. The results are materially unchanged.

Table 3.4 Multivariate analysis of post-intervention audit fee changes

Dependent Variable (Adjusted Values) = *LnAuditFee*						
	(1)		(2)		(3)	
Event window	[-1,+5]		[-1,+5]		[+2,+5]	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Dyear0			0.0693*	(1.84)		
Dyear1			0.0832**	(2.07)		
Dyear2			0.0916**	(2.11)		
Dyear3			0.0372	(0.80)	-0.0902**	(-2.19)
Dyear4			0.0434	(0.81)	-0.0596	(-1.34)
Dyear5			0.0439	(0.72)	-0.0509	(-0.83)
Control Variables (Adjusted Values)						
LnAT	0.4611***	(46.56)	0.4620***	(46.58)	0.4590***	(37.85)
ROA	-0.1430***	(-2.80)	-0.1423***	(-2.77)	-0.1491***	(-3.16)
BTM	0.0002	(0.38)	0.0003	(0.41)	0.0004	(0.96)
LEV	0.0005***	(5.78)	0.0005***	(5.95)	0.0085	(0.46)
INVT	-0.0103	(-0.12)	-0.0098	(-0.12)	-0.0402	(-0.37)
AR	0.0517	(0.57)	0.0533	(0.59)	-0.2040*	(-1.77)
Seg	0.0489***	(6.43)	0.0488***	(6.42)	0.0532***	(5.18)
Big4	0.4831***	(16.90)	0.4822***	(16.90)	0.4762***	(12.22)
IOR	0.1070**	(2.07)	0.1062**	(2.04)	0.2074***	(3.03)
Tenure	-0.0025	(-0.74)	-0.0023	(-0.69)	-0.0065	(-1.55)
INDI	-0.3341***	(-4.71)	-0.3353***	(-4.72)	-0.2681***	(-2.95)
Constant	0.772***	(4.86)	0.777***	(4.91)	1.075***	(6.57)
Year-fixed effect	YES		NO		NO	
Industry-fixed effect	YES		YES		YES	
Adjusted R^2	0.776		0.776		0.812	

Obs.	3520	3520	1262

Notes:

See Appendix B for variable definitions.

*, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. t-statistics reported in parentheses are based on heteroscedasticity robust standard errors clustered by firm. The sample includes firm-years of target firms in the event window [-1, +5] with required data, where Event Year0 is the year of the intervention announcement. For all dependent and control variables in the regressions, the study adjusts their values by the corresponding levels of the matched control firms. Control firms are identified as firms that have never been targeted by hedge funds during the sample period, but have the closest propensity scores to target firms, and are within the same industry. The propensity score is the predicted probability of becoming a hedge fund activism target in the next year, estimated from the model (3.1). Intercept, industry, and year dummies are included.

Table 3.4 reports the results of estimating Eq. (3.2). Column (1) presents baseline regression results by excluding event-year dummies of the model (3.2). They are in line with extant audit pricing literature, indicating that, after DiD adjustments, the model specification is still correct with uncompromised explanation power.

Column (2) reports the results of the model (3.2) within the event window [Year-1, Year+5] with Year-1 omitted as the benchmark group. The estimated coefficient on the dummy variable for the year of intervention (*Dyear0*) is positive and statistically significant. Further, the coefficients for the first year (*Dyear1*) and second year (*Dyear2*) following the event are significantly positive at the 5% level. The coefficients for the third (*Dyear3*), fourth (*Dyear4*) and fifth (*Dyear5*) years following the event have unchanged signs, but are insignificant. The results suggest that, as expected, audit fee increases immediately after the HFA intervention, and the increase persists into the first and second post-event years, with a significant increasing trend (magnitudes). However, the third post-event audit fee quotation sees a sudden drop relative to that of the previous year, with no significant difference compared with pre-event level as well. The fade away of audit fee increase persists into the future. As the trend disappearance is first observed from Year+2 to Year+3, the study then shrinks the event window to [+2, +5] with observations at Year+2 as the benchmark group. Results in column (3) show that the audit fee plunged 9% at Year+3 relative to Year+2.

Taken together, these findings are consistent with the expectation that auditors increase risk premium following HFA intervene with their auditees in order to compensate 'newly injected' uncertainties; and such initial risk concerns ease over time when understanding of the HFA deepened and/or beneficiary consequences emerged. Moreover, research design controlled for potential indirect channels by which HFA affects audit fee via altering target's fundamentals, blockholders' demand and/or auditor choice [53]. Hence, the results in Table 3.4 are not driven by the alternative explanation of indirect effects.

As for the control variables, as expected, results show positively significant coefficients on *LnAT* and *Seg,* indicating that more complex business is associated with higher audit

53 Big4 was a dummy variable. After adjustment via subtracting corresponding value of matched control firms, the meaning of estimated coefficients on this variable (ranging from -1 to 1) has changed to the effect of the auditor choice difference on audit fee.

investments and fees. Significant coefficients on *ROA* and *LEV* suggest that risk premium is negatively correlated with client performance and positively associated with financial leverage.

3.4.3 Impact of auditor - HFA experiences

The multivariate test results show that audit fee falls back after the second year following the event. This section examines the potential rationale behind this phenomenon. To do so, this study extends the analysis by exploring whether the reversion of audit fee premium observed in [+2, +5] is caused by the increase in the understanding/knowledge of the HFA as predicted in Hypothesis 2.

Assuming that the more years an auditor encounters a HFA (involved in the auditee), the more the HFA's competence can be recognised by the auditor, the study includes a new variable, auditor-HFA experiences (*EXP*), to capture the familiarity of the given auditor-HFA pair. Specifically, first, for the 574 HFAs identified in the original sample (see Table 3.1), the author counts the number of years they associated (through target companies) with each auditor[54] (based on 13D, 13D/A and DEF 14A filings) at each target company's fiscal year-end until the shareholding dropped below 5%. If multiple HFAs are involved in an event/firm, the study takes the number of whoever is the highest. For better exposition, the count is scaled by 100. The study investigates the association between audit fee-dropping during [+2, +5] and auditor-HFA experiences by estimating the following model[55],

$$\begin{aligned} LnAuditFee_{i,t} = {} & \alpha + \beta_1 EXP_{i,t} + \beta_2 LnAT_{i,t} + \beta_3 ROA_{i,t} + \beta_4 BTM_{i,t} + \beta_5 LEV_{i,t} \\ & + \beta_6 INVT_{i,t} + \beta_7 AR_{i,t} + \beta_8 Seg_{i,t} + \beta_9 Big4_{i,t} + \beta_{10} IOR_{i,t} \\ & + \beta_{11} Tenure_{i,t} + \beta_{12} INDI_{i,t} + Industry\ Dummies + \varepsilon_{i,t} \end{aligned} \quad (3.3)$$

54 Judgment of auditor identity is based on auditor's name/brand as reported by DEF 14A.

55 The model is adopted from model (2). Event-year dummies are replaced by EXP due to multicollinearity. That is, the auditor-HFA experiences are highly correlated to time variables because the experience generally increase with time. However, since the main object of this test is to examine the relationship within a period rather than forming comparison. The specification should be appropriate.

where *EXP* represents the auditor's past experiences in dealing with a specific HFA, and other variables are as previously defined. Table 3.5 presents the results. The coefficient of *EXP* is -0.0555 and significant at 1 percent level, implying that the audit fee dropping after Year+2 can be explained by the increase in the recognition of the HFA involved. The result suggests that, although the immediate auditor reaction following activism might be dominantly driven by the concerns of new risks, their initial overreaction will eventually be recalibrated as understanding increases over time. This corroborates hypothesis 2 and the inference from the multivariate test.

Table 3.5 Multivariate analysis of audit fee dropping and auditor-HFA experiences

Dependent Variable (Adjusted Values)= *LnAuditFee*		
Event window	[+2,+5]	
	Coefficient	t-statistic
EXP	-0.0555***	(-3.84)
Control Variables (Adjusted Values)		
LnAT	0.4551***	(36.09)
ROA	-0.1411***	(-2.88)
BTM	0.0005*	(1.87)
LEV	0.0049	(0.29)
INVT	-0.0642	(-0.58)
AR	-0.2203*	(-1.84)
Seg	0.0559***	(5.40)
Big4	0.4530***	(11.52)
IOR	0.2251***	(3.23)
Tenure	-0.0044	(-1.05)
INDI	-0.2872***	(-3.18)
Constant	1.1301***	(10.04)
Industry-fixed effect	YES	
Adjusted R^2	0.8120	
Obs.	1262	

Notes:

See Appendix B for variable definitions.

*, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. t-statistics reported in parentheses are based on heteroscedasticity robust standard errors clustered by firm. The sample includes firm-years of target firms in the event window [-1, +5] with required data, where Event Year0 is the year of the intervention announcement. For all dependent and control variables in the regressions, the study adjusts their values by the corresponding levels of the matched control firms. Control firms are identified as firms that have never been targeted by hedge funds during the sample period, but have the closest propensity scores to target firms, and are within the same industry. The propensity score is the predicted probability of becoming a hedge fund activism target in the next year, estimated from the model (3.1). Intercept, industry, and year dummies are included.

In summary, above evidence shows that audit fee increases immediately following the activism and, on average, falls back from the third post-event engagement onwards.

Moreover, the fall-back can be explained by the auditor's past experiences in dealing with clients with which the specific HFA has intervened. These findings suggest a learning curve of auditor's risk assessment towards HFA intervention.

3.5 Tests of alternative explanations

This subsection presents two additional tests to further rule out alternative explanations other than risk perception changes.

3.5.1 Is increased audit fee associated with extant litigation and non-litigation risks?

One possible alternative explanation of results is changes in audit fees are driven by risk factors observable at the point when pricing took place; rather than the perception of future uncertainties. To rule out this possibility, the author constructs two variables – *ΔNAF* and *LMO* – and interact with event-year dummies. *ΔNAF* is the non-audit-fee change (in million dollars) over the previous year, capturing auditors' *ex ante* business loss. The non-audit fee is calculated as item 'Total' minus item 'Audit Fees' as reported in DEF 14A. *LMO* is a dummy variable that equals 1 if modified audit opinion was issued in the previous year, which proxies for pre-existing litigation risks. Therefore, if the alternative explanation holds, significantly negative (positive) coefficients on interaction terms between event-year dummy and *ΔNAF* (*LMO*) should be observed. The results shown in Table 3.6 provide no indication supporting such a concern.

Table 3.6 Target firms' ex ante risk in boosting post-event audit fees

Dependent Variable (Adjusted Values) = *LnAuditFee*		
Event window	[-1,+5]	
	Coefficient	t-statistic
Dyear0	0.0529	(1.14)
Dyear1	0.0535	(1.04)
Dyear2	0.0877	(1.62)
Dyear3	0.0465	(0.78)
Dyear4	0.0163	(0.25)
Dyear5	0.0157	(0.22)
Change in non-audit-fees (Adjusted Values)		
Dyear0 × ΔNAF	-0.0844	(-1.67)
Dyear1 × ΔNAF	0.1290*	(1.68)
Dyear2 × ΔNAF	0.0412	(0.67)
Dyear3 × ΔNAF	0.0383	(0.68)
Dyear4 × ΔNAF	0.0741	(1.23)

Dyear5 × ΔNAF	0.0580	(0.91)
ΔNAF	-0.0227	(-0.69)
Lagged modified opinion (Adjusted Values)		
Dyear0 × LMO	0.0373	(0.48)
Dyear1 × LMO	0.0733	(0.90)
Dyear2 × LMO	-0.0004	(-0.00)
Dyear3 × LMO	-0.0398	(-0.43)
Dyear4 × LMO	0.0786	(0.71)
Dyear5 × LMO	0.0992	(0.75)
LMO	0.0259	(0.47)
Control Variables (Adjusted Values)		
LnAT	0.4623***	(46.43)
ROA	-0.1370***	(-2.66)
BTM	0.0002	(0.28)
LEV	0.0005***	(5.56)
INVT	-0.0034	(-0.04)
AR	0.0676	(0.76)
Seg	0.0484***	(6.33)
Big4	0.4810***	(16.96)
IOR	0.1023*	(1.95)
Tenure	-0.0027	(-0.81)
INDI	-0.3113***	(-4.42)
Constant	0.7461***	(4.62)
Industry-fixed effect	YES	
Adjusted R^2	0.7771	
Obs.	3520	

Notes:

See Appendix B for variable definitions.

*, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. t-statistics reported in parentheses are based on heteroscedasticity robust standard errors clustered by firm. The sample includes firm-years of target firms in the event window [-1, +5] with required data, where Event Year0 is the year of the intervention announcement. For all dependent and control variables in the regressions, the study adjusts their values by the corresponding levels of the matched control firms. Control firms are identified as firms that have never been targeted by hedge funds during the sample period, but have the closest propensity scores to target firms, and are within the same industry. The propensity score is the predicted probability of becoming a hedge fund activism target in the next year, estimated from the model (3.1). Intercept, industry, and year dummies are included.

3.5.2 Demand or risk?

Although the institutional ownership ratio *IOR* has been added in main tests to control for the proportional audit fee changes due to higher monitoring demand of institutional HFAs, it is possible that such demand variations only reflect in changes in specific

corporate governance settings. Hence, the study proposes two proxies[56] to further capture such demand-driven fee surge – changes in auditee size (*ΔACsize)* and changes in board size (*ΔBsize*). The study calculates *ΔACsize* and *ΔBsize* over the previous fiscal year-end[57], and interact them with event year-dummies. If the concerns over HFAs' demands induce a fee hike, significantly positive coefficients should be observed on the interaction terms. The results shown in Table 3.7 rule out such a possibility.

Table 3.7 HFAs' demand in increasing post-event audit fees

Dependent Variable (Adjusted Values) = *LnAuditFee*				
Event window	[-1,+5]			
	Coefficient	t-statistic	Coefficient	t-statistic
Dyear0	0.0557	(1.38)	0.0534	(1.32)
Dyear1	0.0653	(1.56)	0.0686	(1.62)
Dyear2	0.0791*	(1.77)	0.0784*	(1.75)
Dyear3	0.0169	(0.35)	0.0195	(0.41)
Dyear4	0.0193	(0.35)	0.0153	(0.28)
Dyear5	0.0304	(0.49)	0.0323	(0.52)
Change in audit committee size (Adjusted Values)				
Dyear0 × ΔACsize	-0.0192	(-0.53)		
Dyear1 × ΔACsize	0.0388	(1.11)		
Dyear2 × ΔACsize	0.0050	(0.14)		
Dyear3 × ΔACsize	0.0614	(1.64)		
Dyear4 × ΔACsize	0.0116	(0.27)		
Dyear5 × ΔACsize	0.0260	(0.72)		
ΔACsize	-0.0195	(-0.73)		
Change in board size (Adjusted Values)				
Dyear0 × ΔBsize			0.0193	(0.61)
Dyear1 × ΔBsize			0.0390	(1.37)
Dyear2 × ΔBsize			0.0163	(0.55)
Dyear3 × ΔBsize			0.0636	(1.93)
Dyear4 × ΔBsize			0.0117	(0.28)
Dyear5 × ΔBsize			0.0184	(0.49)
ΔBsize			-0.0383*	(-1.72)
Control Variables (Adjusted Values)				

56 Admittedly, demand is rather difficult to measure accurately without proprietary information. However, the two proxies made, to the authors' best knowledge and data accessibility should, at least partially, represent changes of audit demand.

57 The study also tests using 1) changes of the number of independent directors within audit committee; 2) changes of the number of non-executive directors within audit committee; 3) changes of independent directors' per cent of audit committee; 4) changes of NED per cent of audit committee; 5) changes of the number of independent directors within board; 6) changes of the number of non-executive directors within board; 7) changes of independent directors' per cent of board; and 8) changes of NED per cent of board. None of these generated significant coefficients on interaction terms.

LnAT	0.459***	(44.53)	0.458***	(44.46)
ROA	-0.112***	(-2.58)	-0.115***	(-2.67)
BTM	0.0006	(1.28)	0.0006	(1.45)
LEV	0.0005***	(6.55)	0.0005***	(6.52)
INVT	-0.0047	(-0.05)	-0.0053	(-0.06)
AR	0.1151	(1.24)	0.1112	(1.21)
Seg	0.0493***	(6.25)	0.0491***	(6.20)
Big4	0.5021***	(16.84)	0.5021***	(16.82)
IOR	0.1253**	(2.32)	0.1260**	(2.36)
Tenure	-0.0029	(-0.86)	-0.0028	(-0.82)
INDI	-0.2841***	(-3.97)	-0.2884***	(-4.02)
Constant	0.856***	(2.88)	0.875***	(3.00)
Industry-fixed effect	YES		YES	
Adjusted R^2	0.7861		0.7861	
Obs.	3244		3244	

Notes:

See Appendix B for variable definitions.

*, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. t-statistics reported in parentheses are based on heteroscedasticity robust standard errors clustered by firm. The sample includes firm-years of target firms in the event window [-1, +5] with required data, where Event Year0 is the year of the intervention announcement. For all dependent and control variables in the regressions, the study adjusts their values by the corresponding levels of the matched control firms. Control firms are identified as firms that have never been targeted by hedge funds during the sample period, but have the closest propensity scores to target firms, and are within the same industry. The propensity score is the predicted probability of becoming a hedge fund activism target in the next year, estimated from the model (3.1). Intercept, industry, and year dummies are included.

3.6 Other robustness tests

To further examine the robustness of previous results, three additional (untabulated) sensitivity tests[58] have been conducted:

1. Survivorship bias - Brav et al. (2008b, p. 1731) note: 'given that successful activism often leads to attrition through the sale of the target company, any *ex post* performance analysis based on surviving firms may underestimate the positive effect of activism'. Therefore, robustness test further trims matched samples by only including 184 pairs that survived throughout the event window [-1, +5]; and re-run all tests. The results are similar to original ones.

2. Extending pre-event window – Further tests extend the pre-intervention window to Year-3 and use [-3,-1] as the benchmark group. The post-event fee pattern does not change, but significance largely improves. This might because the propensity score-matching based on model (3.1) aligns *ex ante* with the condition of target and control at Year-1; but not necessarily at Year-2 and Year-3. So the DiD adjustment employed cannot eliminate time-fixed effect in those two years, which reduces the pre-event adjusted mean of *LnAuditFee* (audit fee has an upward trend over time). This consequently increases differences between pre- and post- values.

3. Using alternative DiD setting – Further tests transform the sample and model into a 'traditional' setting that uses treatment dummy – *Target* – to interact with event-year dummies (without adjusting variables). Again, the post-event fee trend does not change, but the significance of estimated coefficients sees a large improvement, which is because the 'traditional' setting is more relaxed on the control variables.

58The untabulated results are available upon request.

3.7 Concluding remarks

This chapter extends the audit pricing literature by examining the impact of an increasingly important breed of shareholder activism – activist hedge funds - on auditor's risk perception, proxied by audit fee. The most immediate impact of HFA intervention is uncertainties related to multi-dimensional corporate changes promoted by HFAs. This study proposes that, without sufficient prior knowledge and experience, auditors tend to increase risk premium to compensate their increasing perceptions of litigation risk, residual litigation risk and non-litigation risk; and that such initial risk perceptions ease off over time as a result of improved understanding of the HFA. Using propensity score-matching and different-in-differences adjustments, the results of univariate analysis shows that prior to hedge fund intervention, target firms exhibit no significant differences from the control firms in terms of audit charge, whereas target firms pay significantly higher fees for the year of engagement; but less for the first through the fifth post-intervention audit. Similarly, in multivariate analyses where indirect effects are effectively controlled for, results show audit fee follows a reverse U shape pattern across post-event years. Moreover, findings also suggest that the drop in fee within event window [+2, +5] can be explained by auditor-HFA relationship/experiences. Taken together, these results are in accordance with the theory that auditors' risk perception towards HFA follows a 'learning curve'.

This study also deepened our understanding of HFA based on a transitional view, which contributes to the current debate on whether tightening HFA regulations is warranted. Specifically, on the one hand, this study illustrates that even highly sophisticated market practitioners, such as auditors, hold conservative perceptions towards the new trend of HFA due to concerns originating from the unknown. On the other hand, this chapter finds that the initially perceived uncertainty does ease off over time as understanding improves. Therefore, overall, findings in this chapter rule against fencing HFA; and the author suggests that policymakers should not be swayed by negative public reactions. Rather, the infant community needs more time to be understood.

Furthermore, to a great extent, findings in this chapter echo those of chapter 2 that, from an audit perspective, certain types of blockholding are prevalently recognised as

enforcement of extant corporate governance setting in terms of both supervisory and strategic roles. They answer the questions to prospective regulative reforms from two dimensions. First, blockholders, indeed, are not homogeneous. They have different incentive, activeness and profit-making approach, which aggregately determine how one would affect firm's corporate governance. At least, in the cases of state control and HFA, blockholders are deemed as beneficial by one of the most sophisticated group of market participants. Second, although blockholding has long been criticised for exacerbating Type II agent conflicts, it mitigates Type I conflicts at the same time. Thus, the net effect is the fact that really matter when deciding whether disincentive should be warrantied. In this light, chapter 2 and 3 give precisely such examples.

One limitation of this chapter is that while the study finds robust evidence that audit fee dynamics following HFA intervention are, in fact, driven by risk perception changes, it does not proportionally decompose effects from individual risk elements within the 'risk premium package'. That is, under the empirical setting of this chapter, the event year proxies used can only effectively capture the overall effect consisting of litigation, residual litigation and non-litigation risks. Without proprietary insider data, there is no feasible way for the author to measure or proxy for individual elements explicitly. Hence, future studies could address this problem by using alternative methodologies or databases.

Chapter 4

Hedge Fund Activist Intervention and Earnings Management Reallocation

Chapter 4 Hedge Fund Activist Intervention and Earnings Management Reallocation

Abstract

This chapter further investigates impacts of HFA on portfolio companies' choice between real activity (REM) and accrual-based earning management (AEM) techniques as a result of their influences on the strategic aspect of corporate governance. Specifically, results suggest that target firms' REMs via reducing/postponing R&D and SG&A expenses declined significantly during HFAs' holding period; as well as after shares being withdrawn. This not only indicates that HFAs suppressed managers' intention to deliver earnings at the cost of long-term performance; but also that such beneficial influences persisted in the short- and long-term periods after HFA's disposal of shares. On the AEM side, findings show a significant increase in AEM after hedge fund intervention. This supports the expectation that targeted companies reallocate reduced earnings to AEM as a result of HFAs' demand for balancing stakes and smooth earnings. Overall, these findings support the previous view that HFA serves as a remedy for extant corporate governance.

Keywords: *hedge fund activism; shareholder activism; corporate governance; ownership structure; earnings management; real earnings management; accrual manipulation*

4.1 Introduction

How to report earnings in financial statements is a critical decision with many potential consequences for a company. The major goal of managers to manipulate reported earnings is to meet current and/or prospective investors' expectations. If investors' proportional effect on portfolio companies' earning management decision is viewed as a function of their respective shareholding, incentive and ability to enforce such influences, then it is certain that active-type institutional shareholders show the greatest effect. This chapter examines how a new breed of activist institutional investor – hedge fund activist (HFA) – affects portfolio companies' strategic choices between real activity (REM) and accrual-based earnings management (AEM).

Recent studies show that HFA can be deemed as an extreme form of investor activism in terms of promoting long-term improvements in a portfolio firm's corporate governance, business policies, innovation, and financial performance (Brav et al., 2008b, Brav et al., 2009, Bebchuk et al., 2015, Brav et al., 2016a, Klein and Zur, 2009, Boyson and Mooradian, 2011, Cheng et al., 2012). They share the same characteristics as ordinary hedge funds, such as fund managers' substantial private investment, long lock-up period, and loose regulation (Brav et al., 2008a), which makes them more concentrated, sophisticated and flexible than other types of institutional investor (e.g.,- mutual funds, pension funds, banks etc.). Meanwhile, the active nature defines their means of securing their future through being actively involved in the target firm and agitating changes with great potential for future performance, rather than passively 'waiting for market reward' like other (passive) investors do.

The following distinct differences between the two earnings management strategies offer predictions on the HFA's intervention effect on how targeted firms manage earnings. AEM manipulates earnings through the choice of accounting estimates within generally accepted accounting principles (GAAP) without changing the underlying operating activities of the firm (Gunny, 2010). In contrast, REM refers to real activity manipulation to deviate from normal business practices (Cohen and Zarowin, 2010), with the primary objective being to meet certain earnings thresholds (Roychowdhury, 2006). These activities influence the output of accounting systems generally via

altering the timing or structuring of an operation, investment, and/or financing transaction, such as cutting desirable research and development (R&D) investments with uncertainties and reducing discretional selling, general and administrative (SG&A) expenses (Gunny, 2010, Roychowdhury, 2006). Although different by definition, REM and AEM are not necessarily in conflict with and/or exclusive to each other. For example, REM must be decided beforehand and occur during the fiscal period whereas AEM can be implemented/adjusted afterwards (Zang, 2012), implying a compensating function of AEM. However, most importantly, they are associated with different consequences. REM usually involves utilising suboptimal operational activities at the cost of long-term performance; while AEM generally will not attract any long-term penalty[59].

This study argues that HFAs have a suppression effect on managers' REM decision; and that they reallocate - at least a portion of - those affected earnings to AEM. This is because, first, as suggested by Brav et al. (2016a), HFAs are good at optimising, and tend to optimise operational decisions that can generate long-term value for shareholders, such as R&D with good potential. Thus, extensive REMs conflict with their interests. REM-related research indeed evinces that institutional investors play a monitoring role in reducing managers' myopic behaviour (Bushee, 1998, Roychowdhury, 2006, Zang, 2012). Second, despite this, HFAs still need to compensate for the 'earnings vacuum' caused by cutting REM. This is because, if the HFAs suppress all REMs for the sake of long-term firm value without adjusting AEM, or eliminate AEM altogether, then the chunk of earnings missing from the next financial report would greatly impact on firm value, which is not only against their own interests, but is also expected to be infeasible as a result of resistance from other stakeholders. Third, on the other hand, from the perspective of a HFA's scheduled exit for own financial gains, promoting or allowing a higher level of AEM might be tempting. The study thus predicts that AEM increases and REM decreases after hedge fund intervention.

To test the prediction, this study collects a sample of 2,976 hedge fund activist events from fiscal year 2000 to 2014, using a HFA's filing of Scheduled 13D as the initiation of activism. Following Lawrence et al. (2011), this study then employs the propensity score matching (PSM) method to construct a paired sample in order to eliminate

[59] Except when an aggressive extent of AEM caught SEC's attention.

endogeneity caused by HFAs' targeting decisions (treatment effect) as well as time and market-wide coinstantaneous changes in earnings management. The study predicts the probability of becoming a HFA target in the next year by a logistic regression as specified in Brav et al. (2008b); and use the fitted value to match each target firm with an untargeted firm having the closest propensity score, in the same industry and the same year. To more accurately capture the changes both before and after HFA intervention and to eliminate interferences from the time the HFA entered/exited the company within the fiscal period, the study uses quarterly financial data for targeted and matched control firms in the main tests. Using a difference-in-difference framework results show that, as expected, targeted firms' REMs via reducing/postponing R&D and SG&A expenses declined significantly after HFA intervention; and the effect persists after HFA exits in both short-term and long-term phases. This indicates not only that HFAs suppressed managers' intention to deliver earnings at the cost of long-term performance; but also that such beneficial influences persisted in short and long time periods after the HFA's disposal of shares. On the AEM side, findings show a significant increase in AEM after hedge fund intervention, but the trend disappears when HFAs exited. This supports the expectation that targeted companies reallocate reduced earnings to AEM as a result of HFAs' demand for balancing stakes and smooth earnings. The immediate varnish of their effects on AEM is consistent with the reverting nature of AEM, which suggests that managing earnings through accruals is difficult to maintain in the consecutive years (DeFond and Park, 2001, Dechow and Dichev, 2002).

This study makes three contributions to the existing literature. First, it contributes to the extant literature on the effect of institutional investors on financial reporting quality. Prior research document that active investors, such as venture capital (Wongsunwai, 2013), enhance monitoring which, in turn, mitigates both REM and AEM of their portfolio companies in specific contexts. This chapter illustrates the effect of a topical new breed active investor – HFA – on earnings management, and provides support for the dynamic relation between REM and AEM (Zang, 2012, Cohen and Zarowin, 2010) in the context of HFA intervention. Second, this study extends the ongoing debate on the effectiveness of HFA and provides new evidence supporting prior views that HFA delivers remedies to target firms' decision making and corporate governance in the long run. This echoes the calls of Brav et al. (2008a), Brav et al. (2008b), Brav et al. (2009), Klein and Zur (2011), Clifford (2008) and Brav et al. (2016a)

that HFAs should not be constrained by legislative/regulative disincentives as suggested by some petitioners (see Watchtell (2011) for details).

The rest of the discussion is organised as follows. Section 4.2 reviews relevant prior literature. Section 4.3 develops empirical predictions about how HFAs trade-off between REM and AEM. Section 4.4 describes the data and initial sample matching process. Section 4.5 presents final sample construction and results of the empirical analyses, and Section 4.6 concludes.

4.2 Literature review

4.2.1 Institutional setting and roles of activist hedge fund

HFA is a new hybrid of activist investor and hedge fund. Being activist investors, HFAs actively agitate for changes of portfolio companies that will realise improved returns, rather than 'waiting for returns' of the passive block like other institutional investors, such as mutual and pension fund, do. Meanwhile, they share the same characteristics as hedge funds: (1) pooled, privately organised investment vehicles; (2) administered by professional investment managers who serve as general partners, they have made a substantial investment and they are compensated on the basis of performance; (3) long lock-up periods of at least six months; and (4) they are not widely available to the public, with only a small number of sophisticated investors (usually high net worth individuals), which also makes them free from much regulation, including the requirements of the Investment Company Act of 1940 (Brav et al., 2008b, Brav et al., 2009, Katelouzou, 2012, Boyson and Mooradian, 2007).

Prior literature finds that HFAs achieve significant success in promoting corporate changes (Brav et al., 2008b, Klein and Zur, 2009). The activists have relatively high percentages of ownership and can use leverage and derivative instruments to obtain beneficial ownerships or voting rights (Hu and Black 2006). They can exercise their shareholder rights to nominate and elect board members (Briggs, 2007, Klein and Zur, 2009). They can also cooperate (through proxy fight) with other institutional investors to make their intervention successful (Briggs, 2007, Brav et al., 2008a). HFAs can even acquire the target firm if their demands are not met (Cheng et al., 2012). Further, the activists could pressure individual managers by communicating with the board and other top managers, seeking to remove the managers, publicly criticising the company, filing formal shareholder proposals, launching a proxy fight, and even filing a lawsuit against the company (Brav et al., 2008a). Moreover, HFAs' concentrated portfolio allows them to focus their time and efforts on targeting individual firms.

Like other blockholders, HFAs do not directly engage in the daily operations of the businesses they invest in. However, they have stronger incentive and ability to

influence both strategic and supervisory roles of portfolio companies' corporate governance than other types of investors have. Specifically, first, compared with individual shareholders, HFAs have stronger incentives to engage in costly monitoring activities, since they are less susceptible to the free-rider problem (Grossman and Hart 1980; Gillian and Starks 2000). Second, from an individual perspective, as fund managers' pay depends largely on their funds' absolute returns (Kahan and Rock, 2007, Brav et al., 2009, Brav et al., 2008b, Boyson and Mooradian, 2007), they have stronger compensation incentive to safeguard their investment from suboptimal operational decisions; and/or target's reputational damage. Third, HFAs are largely unregulated so, as a result, such incentive will not be capped by 'Prudent person rule' (Clifford, 2008, Boyson and Mooradian, 2007). In addition, hedge funds are less likely to have business relations with target companies since hedge funds do not sell products or services (Kahan and Rock, 2007). Accordingly, hedge funds have fewer conflicts of interest and are less likely to compromise monitoring (Boyson and Mooradian, 2007).

4.2.2 Techniques of earnings management

Within decades of earnings management study, accrual-based manipulation (i.e. AEM) is, without doubt, the most focused aspect of both policymakers and academia (see Schipper, 1989, Dechow and Skinner, 2000, DeFond, 2010, Dechow et al., 2010 for comprehensive review). The stream of academic research starts from the measuring of total accrual of Healy (1985); and has expanded ever since the discretional/abnormal accrual detecting method proposed by Jones (1991) and Dechow et al. (1995). Later, various studies have examined the specific nature and context of accrual management choice (e.g. Schrand and Wong, 2003, Marquardt and Wiedman, 2004, Dhaliwal et al., 2004 etc.).

Another smaller but growing body of literature studies whether and how, in addition to manipulating accruals, companies can also achieve earnings targets by altering real activities choices (i.e. REM). Schipper (1989, p. 92) first mentions real activity earnings management in her definition of general earnings management as:

> '… a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain … A minor extension to the definition

> would encompass 'real' earnings management, accomplished by timing investment or financing decisions to alter reported earnings or some subset of it. The resulting accounting numbers could be 'smoothed' in the sense that their over-time variability is reduced, but they need not be.'

The realistic use of REM is documented by Graham et al. (2005) who interviewed over 400 financial executives to determine the factors that drive reported earnings and disclosure decisions. They found that 78% of the interviewees are willing to take certain actions to deliver earnings even if at the cost of sacrificing long-term value. This is later supported by Roychowdhury (2006) who reports empirical evidence suggesting that, in order to avoid report losses, companies employ certain types of activities to temporarily boost earnings. Such activities include giving price discount to increase sales, overproduction to report lower cost of goods sold, and reduction of discretionary expenditures to improve reported margins. The nature of REMs has also been widely studied. Gunny (2010) finds that meeting earnings benchmarks is a strong incentive of employing REM; and firms engaging in REM to just meet benchmarks may not sacrifice more future performance than those did not use REM. This suggests that REM could attain current-period benefits that allow the firm to perform better in the future. Cohen and Zarowin (2010) find that companies use both AEM and REM around seasoned equity offering; but the consequences differ. Specifically, the performance decline is more severe for REM than that for AEM, indicating that operational decisions are generally associated with higher long-term cost. Zang (2012) concludes that the relationship between REM and AEM is, on the one hand, determined by their corresponding costs; and on the other hand, AEM is a supplement of REM as the latter must be settled before fiscal year-end whereas the former can be adjusted afterwards according to achieved level of REM and desired level of reported earnings. This result is also consistent with Cohen and Zarowin (2010).

The fundamental difference between REM and AEM is that accruals management is not accomplished by changing the underlying operating activities of the firm, but through the choice of accounting estimates within generally accepted accounting principles (GAAP) used to represent those activities (Gunny, 2010). In contrast, REM refers to real activities manipulation as managers take that deviate from normal business practices (Cohen and Zarowin, 2010) with the primary objective of meeting certain earnings thresholds (Roychowdhury, 2006, Gunny, 2010). These activities influence the output

of an accounting system generally via altering the timing or structuring of an operation, investment, and/or financing transaction, such as overproduction to decrease cost of goods sold (COGS) expense and cutting desirable research and development (R&D) investments to boost current-period earnings (Gunny, 2010, Roychowdhury, 2006).

Therefore, it is rather clear that, by definition, REM and AEM are not in conflict with and/or exclusive to each other. However, given certain demand for window dressing, companies still need to decide the optimal 'recipe', which should take three factors into consideration. First, either tactic has its (potential but predictable) consequences that this study refers to as costs. For example, REM may cause performance degradation because of postponed R&D; and, AEM might lead to Security and Exchange Commission (SEC) sanction. Thus, trade-offs have to be made based on corresponding costs that are associated with the company's specific context, such as firms' competitive status in the industry (Zang, 2012). Second, the firm may have limited flexibility to employ earning management (EM). For example, AEM is constrained by the business operations and accrual manipulation in prior years (Gunny, 2010), as dramatic changes in accounting estimation from the prior period might easily catch the attention of the authority and/or auditors (Zang, 2012, Roychowdhury, 2006). Third, the timing of these two strategies differs. On the one hand, REM must take place during the fiscal year or quarter, after which companies still have the chance to adjust the level of AEM according to the outcome of REM. On the other hand, since at the time when REMs must be decided and implemented, companies face uncertainty as to which accounting treatments the auditor will allow, this implies that potentially excessive or insufficient level of earnings has to be adjusted by AEM afterwards when the need for EM is the most certain (Zang, 2012, Gunny, 2010).

4.3 Hypothesis development

Prior studies have generally concluded that HFAs add value to target companies by improving their corporate governance[60]. Since, as discussed, the strategic choice between AEM and REM is important and 'tricky' for a firm's performance as well as shareholders' future return, it can be reasonably assumed that one of the core influences of HFAs on corporate governance is affecting such strategic behaviour.

Specifically, as REM involves utilising suboptimal operational activities at the cost of long-term firm value, this study expects HFAs to act as deterrents after they are involved in target companies. Prior evidence suggests that HFAs are good at optimising operational decisions that can generate long-term value for shareholders. For example, Brav et al. (2016a) find that firms targeted by HFAs experience an improvement in innovation efficiency, measured by patent counts and citations, during the five-year period following the intervention. Meanwhile, previous literature that reports positive outcomes of HFA intervention show no performance reversal after exit and/or long period of subsequent years (Briggs, 2007, Brav et al., 2008b, Clifford, 2008). Within specific contexts, extant research concludes that institutional investors, in general, play a monitoring role in reducing REM. Bushee (1998) documents that managers are less likely to cut R&D expense to avoid report earnings decline when institutional ownership[61] is high, implying that the sophistication of institutional investors tends to reduce the pressure that causes myopic behaviour. Similarly, Roychowdhury (2006) and Zang (2012) also find empirical evidence showing that the presence and magnitude of REM are negatively related to institutional ownership, which further supports the view that institutional investors are more informed and have a greater ability to understand the long-term implications of current-period's operational

[60] Brav et al. (2008b) identify that hedge funds have positive influences on mitigating agency costs and increasing firm value. Target firms in their sample show increase in payout, CEO turnover rates, and improvements in operating performance and corporate governance. Klein and Zur (2009) document that hedge fund activists succeed in pushing target firms to repurchase shares, change CEOs and increase board representation. Briggs (2007) and Clifford (2008) suggest that hedge fund activists can improve target firm's performance on both long- and short-term bases. Further, in terms of market reaction, Brav et al. (2008b) find the announcements of hedge fund intervention are associated with positive stock returns that persist.

[61] His result is conditional providing the institutional investor is not engaged in momentum trading. As HFAs have much longer lock-up period (usually two years) than other equity-oriented funds, they typically are long-term blockholders; and should fit the condition.

decisions. Also, this would act as a disincentive for managers to engage in REM, particularly if such manipulation reduces long-run firm value.

Moreover, even if in a rare case that an HFA particularly keen on pursuing fast return with relatively low concerns on target firm's long-term performance, it meets their interests the best to cut REM in order to maintain share price when the time of disposal is coming. Because both empirical evidences of Gunny (2005) and Cohen and Zarowin (2010) suggest more significant negative market responses of REM relative to those of AEM, which Cohen and Zarowin (2010, p. 5) interpreted as "… capital markets participants mostly recognise the future earnings implications of managers' myopic behaviours."

Thus, considering the more operational-oriented strategy, relatively long investment horizon of HFA and the preference of the capital market, this study expects REMs of target companies to be lower than the pre-intervention level, as predicted in the following hypothesis:

Hypothesis 1: *Ceteris paribus*, REM decreases after hedge fund intervention.

By definition, however, HFAs eventually have to cash in their effort. In this stance, window-dressing could well be a necessity. Hence, this study further proposes that, instead of simply promoting or eliminating EMs, HFAs reallocate discretional earnings from REM to AEM. That is, if the above prediction was proven true, for targeted companies, there would be an 'earnings vacuum' that needs to be filled, which this study expects HFAs will permit managers to compensate via AEM. First, when entering the target company, if the HFA suppresses all REMs for the sake of long-term firm value without adjusting AEM, or eliminates AEM altogether, then the chunk of earnings missing from the next financial report would greatly hit firm value, which not only goes against their self-interest, but is also expected to be infeasible as a result of resistance from other stakeholders. Therefore, providing there are pre-existing REMs within the target company, it is more reasonable to expect HFAs to make efforts to move the portion of excessive abnormal REM to AEM in order to smooth the transition, meanwhile rectifying long-term harmful operational decisions. Second, from the perspective of a HFA's scheduled exit, for his/her own financial gains, it might be tempting to promote or allow higher levels of AEM. This approach is not harmful in a

way that allowing excessive REM would be, and in fact, may present the firm's financial performance in a better light to new prospective investors. This study thus expects that, after the intervention, HFAs increase AEM as a mean of compensating for curtailed REM in order to ensure a smooth transition and boost their own return. This study tests the following hypothesis in alternative form:

Hypothesis 2: *Ceteris paribus*, AEM increases after hedge fund intervention.

4.4 Data and sample selection

In order to minimise noise between HFA enter/exit date and fiscal period end, the main test uses quarterly financial data. Moreover, to align pre-existing conditions and, further, eliminate effects from common trends, this study employs propensity score matching (PSM) and the difference-in-differences (DiD) approach. However, since some necessary data to estimate propensity score are unavailable for the quarterly dimension, in the PSM step, empirical analyses employ fiscal year-level data instead. Detailed below is the sample construction process.

4.4.1 HFA data collection

Following prior literature (Brav et al., 2008b), the study constructs the HFA sample based on Scheduled 13D and 13D/A filings. The 1934 Security Exchange Act requires investors who intend to influence a firm's management to file and submit Scheduled 13D form to SEC within 10 days of acquiring 5% or more of any class of securities of listed companies. If any material changes since the first filing of Scheduled 13D, Scheduled 13D/A must be subsequently submitted. This study treats the first Scheduled 13D filing of each HFA–target company pair as the announcement of activist investors' intervention initiation.

First, all data entries in the Shareholder Activism database are downloaded from AuditAnalytics, which include all Scheduled 13D and 13D/A filings that were filed between January 1, 2000 and July 31, 2017. Second, this study applies five layers of matching logic[62] to match issuers' identity (CIK) and filing date with corresponding

[62] First, the author matches CIK from AuditAnalytic Shareholder Activism database to header CIK from COMPUSTAT; for no matches, the author maps CIK to GVKEY-CIK link table from WRDS SEC Analytics Suite (this study only uses type 2 and type 3 link for accuracy). Then, for no matches, the researcher further constructs groups (Using AuditAnalytic Shareholder Activism and COMPUSTAT North America Fundamental Quarter) with matching quarterly total assets and sales within upper and lower 1% tolerance. It is deemed a match if there is only one pair of identifiers without unmatched fiscal data in a group. If a group has one pair of identifiers but with a single unmatched fiscal datum, the ticker symbol needs to be the same, or the 'distance' of the company names needs to be lower than 10 for it to be recognised as a matched pair. If a group has two or more pairs of identifiers, this study relaxes the criterion and require assets and sale to be matched for at least two continuous years before it can be recognised as a valid match. The study drops the rest.

permanent company identifier (gvkey and permco) and fiscal year. Third, this study matches filers with a comprehensive list[63] of HFA to identify 13Ds and 13D/As filed by them. This study treats each HFA-target pair as an event with the length as from the first 13D filing date to the first 13D/A filing date indicating less than 5% ownership of issuer. The study then keeps all filings within identified horizons; and drop the rest of the entries (e.g., 13D/A indicating that shareholding percentage dropped below 5%). When one firm was targeted by multiple HFAs at given fiscal year, this study calculates the shareholding amount and per cent based on the sum. For those without subsequent 13D/As, ownership in following years is considered as being kept the same as the prior closest available value.

4.4.2 Sample selection for propensity score matching

As introduced, although the final sample for the main test is based on quarterly financial data, due to unavailability of quarterly data required for propensity score matching, the study have to first constructs the sample based on annual data here, and then generate matched pairs accordingly, based on which the study can build the final sample later.

This study builds a dataset containing all companies listed in the US stock market from the fiscal year 2001 to 2014[64] with all traceable financial, stock price, institutional ownership and analysts' coverage information. To be specific, the researcher obtains, calculates and combines financial data and share price/return data from COMPUSTAT North America annual and CRSP Security monthly for all publically traded companies in the US[65]. Next, the study obtains institutional ownership data from Thomson Reuters'

63 Based on Professor Brav's list, the author manually trace back each fund's history to identify any CIK variances, which makes the number of identified fillers at least one third greater than in any prior studies.

64 Although 13D data in AuditAnalytics is available since calendar year 2000; audit fee data is not available until calendar year 2001. Further, as following calculation/regression require lagged value, the researcher have to cuts the beginning fiscal year of HFA intervention at 2002. Moreover, as the study use 2 year window after intervention; and, at the time of writing, 2016 fiscal year financial data just became available. Thus, the cut-off time is set to 2014.

65 The author uses CCMXPF_LNKHIST linking table and SAS 9.4 to conduct a multi-level precision match between COMPSTAT Fundamental Annual and CSRP Stock Monthly. This process including datadate-intnx match, linktype filtering and link date match.

13F [66] database, analysts' coverage data from I/B/E/S [67], and auditor data from AuditAnalytics[68]. In the end, the study matches the previously constructed activism hedge fund dataset with this one. It should be noted that the actual beginning fiscal year of the HFA event that used is set to 2002 as lagged value is required in the following calculations and regressions.

Table 4.1PSM sample selection and distribution

Panel A: Initial sample selection			
	Number of events	**Number of firms**	**No. of HFA**
Hedge fund activist events filed during 2002–2014 with nonmissing/matched gvkey and permco for target firms	2724	1948	551
Restrictions:			
After removing events if the target was targeted previously	1948	1948	465
After removing observations without (sufficient*) fiscal Year0 financial data	1824	1824	438
After removing observations without (sufficient*) fiscal Year-1 financial data	1118	1118	366

Panel B: HFA events across years					
Original sample			Selected sample		
Calendar year	Number of observations	Per cent	Fiscal year	Number of observations	Per cent
2001	87	3.10%			
2002	131	4.67%	2002	78	6.98%
2003	123	4.38%	2003	71	6.35%
2004	146	5.20%	2004	76	6.80%
2005	232	8.26%	2005	111	9.93%
2006	307	10.93%	2006	122	10.91%
2007	361	12.86%	2007	136	12.16%
2008	301	10.72%	2008	112	10.02%
2009	147	5.24%	2009	48	4.29%
2010	176	6.27%	2010	61	5.46%
2011	182	6.48%	2011	75	6.71%
2012	192	6.84%	2012	79	7.07%
2013	209	7.44%	2013	76	6.80%
2014	214	7.62%	2014	73	6.53%
Total	2808	100%		1118	100%

[66] Match Permno at multi-level.

[67] Match Permno using ICLINK linking table.

[68] Match Permno with CIK.

Panel C: Participation frequency of HFAs					
Original sample			Selected sample		
Number of events	Number of activists	Per cent	Number of events	Number of activists	Per cent
1	222	40.07%	1	194	53.01%
2	109	19.68%	2	65	17.76%
3	55	9.93%	3	29	7.92%
4	33	5.96%	4	17	4.64%
5	20	3.61%	5	14	3.83%
6	13	2.35%	6	12	3.28%
7	15	2.71%	7	5	1.37%
8	9	1.62%	8	2	0.55%
9	10	1.81%	9	3	0.82%
10	8	1.44%	10	2	0.55%
>10	60	10.83%	>10	23	6.28%
Total	554	100%		324	100%

Notes:

This table presents the sample selection and changes in the number of firm-years for target firms. In Panel B, the sample includes firm-years in the event window [-1, +2] with required data for regressions in Table 4.2, where event year 0 is the year of the intervention announcement. Only firms with at least one year's data in pre-event and two years' data in the post-event window are retained. In addition, if a firm was targeted multiple times during the sample period, only the first activist event was retained. The author also drops firm-years in which hedge fund activists have exited.

'*'Refers to sufficient data that are required to conduct the logit regression for propensity score matching.

Initially, from Section 13D – the HFA matching process, the study identifies 625 activist hedge fund and 5,008 activist events (13D filing) involving 3,385 issuers for the period 2000 to 2014. As shown in Table 4.1, Panel A, after matching the initial sample to the COMPUSTAT-CSRP-13F- I/B/E/S combined dataset; and shrinking the period to 2002-2014, 2,724 events initiated by 551 activists find a match. The study removes events if the issuer was targeted by hedge fund activists previously, which further reduces the event to 1,948 targeted by 465 activists. As the DiD approach requires aligning pre-event conditions, the study further restricts target firms to have one-year's required data before (event year -1) the event, where year 0 is defined as the year of the initial Scheduled 13D filing. Data unavailability reduces the sample to 1,118 events/firms targeted by 366 activist hedge funds. Table 4.1, Panel B presents the hedge fund activist events across years. The first and last three columns present statistics of original and selected sample distributions longitudinally. As expected, it is observed that an increasing trend of hedge fund activism between 2001 and 2007; and a decreasing tendency since 2007 when the global financial crisis took place; followed by a gradual recovery from 2012. Table 4.1, Panel C, presents the frequency of participation by

hedge fund activists. A majority (60.68% in the original sample) of funds are involved in no more than three activist events in the sample period, while a relatively small number (10.83% in the original sample) of activist hedge funds engages in more than 10 activist events in the period. The proportional differences between original and selected samples are more pronounced for high-frequency HFAs, which is due to the requirement that only the first entry for each target company can be retained. This result suggests that while the majority of hedge funds do not engage in activism on a regular basis, some do so frequently.

Overall, the selected sample for PSM is representative in terms of general trend and composition without dramatic differences; meanwhile, it is comparable to prior studies (Cheng et al., 2012, Cheng et al., 2015).

4.4.3 Propensity score matching

One might be concerned that any change in earnings management that found in target firms could be driven by a contemporaneous trend occurring for all listed firms. In addition, the differences of EMs can also result from target firms' *ex ante* characteristics associated with a high likelihood of becoming a hedge fund target firm (Cheng et al., 2012, Cheng et al., 2015, Brav et al., 2008b). As a result, to control for potential selection bias, the study uses the propensity score matching method to construct a sample of control firms (see Footnote 30 for a brief discussion of PSM).

Specifically, for each target firm, the study identifies a non-target control firm with the closest propensity score in event Year -1, with Year 0 being the fiscal year in which the intervention took place. The propensity score is the predicted odds of becoming a hedge fund activism target in the next year, estimated from a logistic regression model as described in the next subsection. The study estimates this logistic regression for all firms in the combined dataset with available data from 2001 to 2014 and then use the obtained coefficients to estimate the propensity score for each firm.

To identify matched firms based on the likelihood of being targeted by HFAs, this study employs the logistic regression model (4.1) as in Brav et al. (2008b) to examine the determinants of hedge fund intervention. The calliper match method was used to avoid a bad match. Following Austin (2011a), the calliper widths are set to 0.02 times the standard deviation of each year's propensity score. Since the standard deviation of the obtained propensity score is 0.015, a stricter calliper width of 0.002 is used. To further eliminate industry- and year-fixed effects, it is required that both firms within a pair must be within the same two-digit SIC industry and fiscal year. Therefore,

$$\begin{aligned} D_{Target} = {} & \alpha + \alpha_1 LOGMV_{t-1} + \alpha_2 TobinQ_{t-1} + \alpha_3 Salegrowth_{t-1} + \alpha_4 ROA_{t-1} \\ & + \alpha_5 LEV_{t-1} + \alpha_6 Dividend_{t-1} + \alpha_7 RANDD_{t-1} + \alpha_8 HHI_{t-1} \\ & + \alpha_9 Analysts_{t-1} + \alpha_{10} InstitutionalPct_{t-1} + \alpha_{11} Dyear \\ & + \alpha_{12} Dindustry + \varepsilon \end{aligned} \tag{4.1}$$

where, D_{Target} equals one if the firm is a hedge fund activism target in the year t and zero otherwise. *LOGMV* is the log of market capitalisation. *TobinQ* represents Tobin's *Q,* which is measured as book value of debt plus market value of equity divided by the sum of book value of debt and book value of equity. $Salegrowth$ is the growth rate of sales revenue over the previous year. *ROA* is earnings before extraordinary items scaled by lagged total assets. *LEV* is book leverage ratio, calculated as net income plus depreciation and amortisation scaled by lagged total assets. *Dividend* is the dividend per share. *RANDD* represents R&D investments scaled by lagged total assets. *HHI* is the Herfindahl-Hirschman index of sales in different business segments. *Analysts* represents the average aggregated quarterly number of analysts following the firm. IOR denotes the fraction of outstanding shares held by institutional investors. This study also controls for two-digit SIC industry- and year-fixed effects to account for industry characteristics and overall economic factors over time. See Appendix C for detailed variable definitions.

Table 4.2, Panel A reports descriptive statistics for variables used in the following PSM procedure. Panel B presents the results of this logistic regression analysis on the *ex post* odds of being targeted by activist hedge funds. Consistent with Brav et al. (2008b) and Cheng et al. (2015), firms are more likely to be targeted by hedge fund activists when they are smaller (*LOGMV*) and have poor market valuation (*TobinQ*),

more concentrated business operations (*HHI*), less analyst coverage, and higher levels of institutional ownership (*InstitutionalPct*).

Table 4.2 Propensity score matching

Panel A: Descriptive statistics for variables in PSM						
Variable	N	Mean	Q1	Median	Q3	SD
$LOGMV_{t-1}$	101139	5.900	1.390	5.780	7.300	2.130
$TobinQ_{t-1}$	82780	2.350	0.340	1.490	2.490	2.600
$Salegrowth_{t-1}$	71497	0.120	-0.730	0.070	0.200	0.410
ROA_{t-1}	72499	-0.010	-1.070	0.020	0.070	0.200
LEV_{t-1}	82902	0.350	0	0.310	0.550	0.310
$Dividend_{t-1}$	82811	0.350	0	0	0.460	0.640
$RANDD_{t-1}$	101277	0.030	0	0	0.010	0.090
HHI_{t-1}	101277	0.850	0.130	1	1	0.250
$Analysts_{t-1}$	101277	3.580	0	1	5	5.710
$InstitutionalPct_{t-1}$	101277	0.320	0	0.200	0.630	0.340

Panel B: Propensity score matching regression			
Dependent variable: D_{Target}			
		Odds of being targeted by activist hedge funds	
Independent variables	Expected signs	Coefficients	t-stat
$LOGMV_{t-1}$	-	-0.288***	(-9.73)
$TobinQ_{t-1}$	-	-0.0953***	(-4.19)
$Salegrowth_{t-1}$	-	-0.037	(-0.41)
ROA_{t-1}	+	0.073	(0.32)
LEV_{t-1}	?	0.215*	(1.86)
$Dividend_{t-1}$	-	-0.263***	(-2.74)
$RANDD_{t-1}$	?	0.852*	(1.70)
HHI_{t-1}	-	-0.254*	(-1.92)
$Analysts_{t-1}$	+	-0.014*	(-1.69)
$InstitutionalPct_{t-1}$	+	1.874***	(13.43)
Industry Fixed Effect		Yes	
Year Fixed Effect		Yes	
Constant		-5.913***	(-7.47)
pseudo R^2		0.072	
Obs.		60957	

Notes:

For each target firm, this study identifies a control firm with the closest propensity score within calliper and employing the same class of auditor. The propensity score is the predicted probability of becoming a hedge fund activism target in the next year, estimated from the model in Table IV of Brav et al. (2008). Panel A reports descriptive statistics for variables used in PSM. Panel B reports the estimated coefficients for the logit model regression of targeting likelihood. The sample includes all firm-years in [2001, 2014] with required data.

LOGMV = the log of market capitalisation (#199 * #25) (in millions of dollars).

TobinQ = Tobin's Q computed as (#34 + #9 + #199 * #25)/(#34 + #9 + #60).

Salegrowth = the growth rate of sales (#12) over the previous year.

ROA = EBITDA/lagged assets (#18/#6).

LEV = debt/(debt + book value of equity), computed as (#9 + #34)/(#9 + #34 + #60).

Dividend = dividend per share, computed as (#21/#25).

RANDD = R&D scaled by lagged asset (#46/#6).

HHI = the Herfindahl-Hirschman index of sales in different business segments as reported by COMPUSTAT.

Analysts = mean of aggregated quarterly number of analysts covering the firm as reported by I/B/E/S.

InstitutionalPct = aggregated institutional ownership in Thomas Reuters' 13f database.

Year- and industry-fixed effects are also included.

t-statistics reported in parentheses are based on heteroscedasticity robust standard errors.

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

The study then matches each targeted firm/event with one firm that has never been targeted by HFA[69] and with closest propensity score; while the score difference must not exceed 0.002. The process eventually yielded 833 valid pairs.

4.4.4 Measurements of earnings management

This study estimates various earnings management measurements using available financial data from COMPUSTAT North America Fundamental Quarterly (Daily Update). The dataset includes quarterly data for firms covering the fiscal years from 1999 to 2016.

Measurement of REMs

The primary focus of REM techniques[70] in this article are earnings inflation via 1) decreasing discretionary research and development (R&D) expenses; and 2)

[69] The judgement is based on a full initial HFA sample with 5,008 events. To be specific, if the given firm is involved in any of these 5,008 events, then all of its firm-years were removed after regression and before matching.

[70] Two commonly used REM measurements are not included in this article because: For REM techniques that increase reported earnings via timing the sale of fixed assets to report gains, as the vast majority of previous literature reports that HFAs promote spinoff of underperformed assets and refocus business operations in order to ultimately improve targets' short and long-term performance. The study cannot split estimated REM via asset gain a portion that stems from REM and another portion that is actually caused by HFAs' improving movement. Second, this study excludes the type of REM via cutting prices or extend more lenient credit terms to boost sales and / or overproduction to decrease cost of goods sold (COGS) expense because only one fourth of the final matched sample has non-zero and/or non-missing quarterly COGS entries. Since the study cannot rule out the possibility that there is a systematic cause

decreasing discretionary Selling, General and Administrative (SG&A) expenses. As noted by Roychowdhury (2006), when discretionary expenditures, such as R&D and SG&A, cannot immediately generate revenues and incomes, it is very tempting for managers to reduce this portion of expenses that consequently increases reported earnings.

The normal level of R&D expense is estimated using the Gunny (2010) model as following,

$$\frac{RND_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 MV_t + \alpha_3 Q_t + \alpha_4 \frac{INT_t}{A_{t-1}} + \alpha_5 \frac{RND_{t-1}}{A_{t-1}} + \varepsilon_t^{REMRD} \quad . \qquad (4.2)$$

The R&D REM dataset contains all firm-quarters with the COMPUSTAT variables necessary to estimate abnormal R&D expense between the first quarter of 1999 and the fourth quarter of the 2016 fiscal year. Following prior literature, this study replaces missing R&D data with zero. Equation (4.2) is based on prior research that develops an expectations model for the level of R&D intensity (Gunny, 2010). The model is estimated cross-sectionally for every quarter and industry (two-digit SIC); and requires that the estimation can only be executed if at least 10 observations are present in each quarter-industry group. The independent variables are designed to control for factors that influence the level of R&D spending. Specifically, this study uses the natural logarithm of the market value of equity (*MV*) to control for size. Tobin's Q (*Q*) is a proxy for the marginal benefit to the marginal cost of installing an additional unit of a new investment; calculated as the sum of market value of equity, preferred stock, long-term debt, and short-term debt divided by total assets. Internal funds (*INT*) are a proxy for reduced funds available for investment, calculated as the sum of income before extraordinary items, R&D, and depreciation. The lagged R&D (RND_{t-1}) serves as a proxy for the firm's R&D opportunity set. The residual term (ε^{REMRD}) represents the abnormal level of R&D expense (REM via reducing/delaying R&D expense). In the main test, the study multiplies this residual value by -1 so that a positive value is consistent with income-increasing REM. See Appendix C for details of variable definitions.

for such a large scale of missing data to occur, as a caution, the author excludes such measurement to avoid bias.

The normal level of SG&A is estimated using the Gunny (2010) model as following:

$$\frac{SGA_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 MV_t + \alpha_3 Q_t + \alpha_4 \frac{INT_t}{A_{t-1}} + \alpha_5 \frac{\Delta S_t}{A_{t-1}} + \alpha_6 \frac{\Delta S_t}{A_{t-1}} \times DD + \varepsilon_t^{REMSGA} \quad . \qquad (4.3)$$

The SG&A REM sample contains all firm-years with the COMPUSTAT variables necessary to estimate abnormal SG&A expense between the first quarter of 1999 and the fourth quarter of the 2016 fiscal year. Equation (4.3) is similarly estimated cross-sectionally by quarter and industry; and requires that the estimation can only be executed if at least 10 observations are present in each quarter-industry group. In addition to market value (*MV*), Tobin's Q (*Q*), and internal funds (*INT*), the study further incorporates controls (*ΔS*) for ''sticky'' cost behaviour (Gunny, 2010). Costs are sticky if the magnitude of a cost increase associated with increased sales is greater than the magnitude of a cost decrease associated with an equal decrease in sales. The logic is that managers trade off the expected costs of maintaining unutilised resources during periods of weak demand with the expected adjustment costs of replacing these resources if demand is restored. As a result, this study uses change in sales times as an indicator variable (*DD*) equal to one when sales revenue decreases between *t-1* and *t* (*ΔS* × *DD*). Not including this element in the SG&A expectations model may lead to underestimating (overestimating) the response of costs to increases (decreases) in sales. The residual term (ε^{REMSGA}) represents the abnormal level of SG&A (REM via reducing/delaying SG&A expenses). In the main test, the study multiplies this residual value by -1 so that a positive value is consistent with income-increasing REM. See Appendix C for details of variable definitions.

Measurement of AEMs

This study estimates the normal level of accruals using Kothari et al. (2005) modified model as following:

$$\frac{TA_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{\Delta S_t - \Delta AR_t}{A_{t-1}} + \alpha_3 \frac{PPE_t}{A_{t-1}} + \alpha_4 ROA_t + \varepsilon_t^{AEM} \quad . \qquad (4.4)$$

The AEM sample contains all firm-years with the COMPUSTAT variables necessary to estimate the normal level of accruals between the first quarter of 1999 and the fourth

quarter of the 2016 fiscal year. Equation (4.4) is estimated cross-sectionally by quarter and industry; and requires that the estimation can only be executed if at least 10 observations are present in each quarter-industry group. Total accruals (TA) is calculated as income before extraordinary items minus cash flow from operating activities. The change of revenue/sales (ΔS) is adjusted by the change of account receivables (ΔAR) in order to take the manipulation via credit sale into consideration. Gross property, plant and equipment (PPE) is included to capture the normal level of depreciation. Return on asset is calculated as net income divided by total assets. The residual term (ε^{AEM}) represents the abnormal level of accruals. See Appendix C for details of variable definitions.

Table 4.3 Estimation of the normal level of R&D expense, SG&A expense, and accruals

Eq. 4.2: R&D			Eq. 4.3: SG&A			Eq. 4.4: Accruals		
RND_t/A_{t-1}			SGA_t/A_{t-1}			TA_t/A_{t-1}		
Intercept	-0.0018	(0.17)	Intercept	0.0627	(0.06)*	Intercept	0.0061	(0.00)***
$\frac{1}{A_{t-1}}$	0.0012	(0.00)***	$\frac{1}{A_{t-1}}$	0.2266	(0.00)***	$\frac{1}{A_{t-1}}$	0.2496	(0.00)***
MV_t	0.0004	(0.00)***	MV_t	-0.0038	(0.00)***	$\frac{\Delta S_t - \Delta AR_t}{A_{t-1}}$	0.0877	(0.00)***
Q_t	0.0006	(0.16)	Q_t	0.0084	(0.46)	$\frac{PPE_t}{A_{t-1}}$	-0.0759	(0.00)***
$\frac{INT_t}{A_{t-1}}$	0.0023	(0.02)**	$\frac{INT_t}{A_{t-1}}$	-0.1347	(0.00)***	ROA_t	0.1816	(0.35)
$\frac{RND_{t-1}}{A_{t-1}}$	0.9169	(0.00)***	$\frac{\Delta S_t}{A_{t-1}}$	0.3434	(0.01)***			
			$\frac{\Delta S_t}{A_{t-1}} \times DD$	-0.7372	(0.04)**			
No. of quarter – industry groups	2,476			4,109			4,159	
Avg. no. of obs. in a group	168			129			139	
Adj. R^2	0.75			0.60			0.50	

Notes:

The above ordinary least squares regressions are estimated cross-sectionally within each industry (two-digit SIC) and quarter from the first quarter of 1999 to the fourth quarter of 2016 with at least 10 observations. All variables are winsorized at the top and bottom 1% at each industry-quarter level. The reported coefficients are the mean value of the coefficients across the industry-quarter group.

p-values of two-tailed t-tests (in parentheses) are calculated using the mean value of coefficients against standard error of the mean coefficients across the industry-quarters. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

The adjusted R^2 and the number of observations is the mean across the industry-quarters. The variables are defined as follows (COMPUSTAT Quarterly data items in brackets):

RND = research and development (R&D) expenses [#4],

A = total assets [#44],

MV = the natural log of market value [#59*prccq],

Q = Tobin's Q [((#59*prccq) + #55 + #51 + #45) /#44],

INT = internal funds [#8 + #5 + #4],

SGA = selling, general and administrative (SG&A) Expenses [#1],

S = total sales [#2],

DD = indicator variable equals 1 when total sales [#2] decrease between t-1 and t, zero otherwise,

TA = total accruals [#8 - #108],

AR = account receivables [#103],

PPE = gross property, plant and equipment [#118],

ROA = return on assets [#69 / #44].

Table 4.3 reports the estimation results for equations (2) through (4). For every industry-quarter with more than 10 observations, the equations are estimated cross-sectionally over the period from the first quarter of 1999 to the fourth quarter of 2016. All variables are winsorized at the top and bottom 1% at each industry-quarter level to avoid the influence of outliers. The reported coefficients are the mean value of the coefficients across industry-quarters. *p*-values of two-tailed t-tests are calculated using the mean value of coefficients against standard error of the mean coefficients across the industry-quarters. The reported observations and adjusted R^2 are means across industry-years. The estimated coefficients are generally significant and in accordance with expectations. However, the marginal benefit to marginal cost of using respective REM technique as proxied by Tobin's Q (Q) does not exhibit influences on the normal level of REM.

4.5 Empirical analyses

This study examines the change of earnings management behaviours of companies that are targeted by HFAs through redistribution between REM and AEM. This section first describes the way the final sample is constructed and how the phases are defined, with univariate and multivariate analyses following.

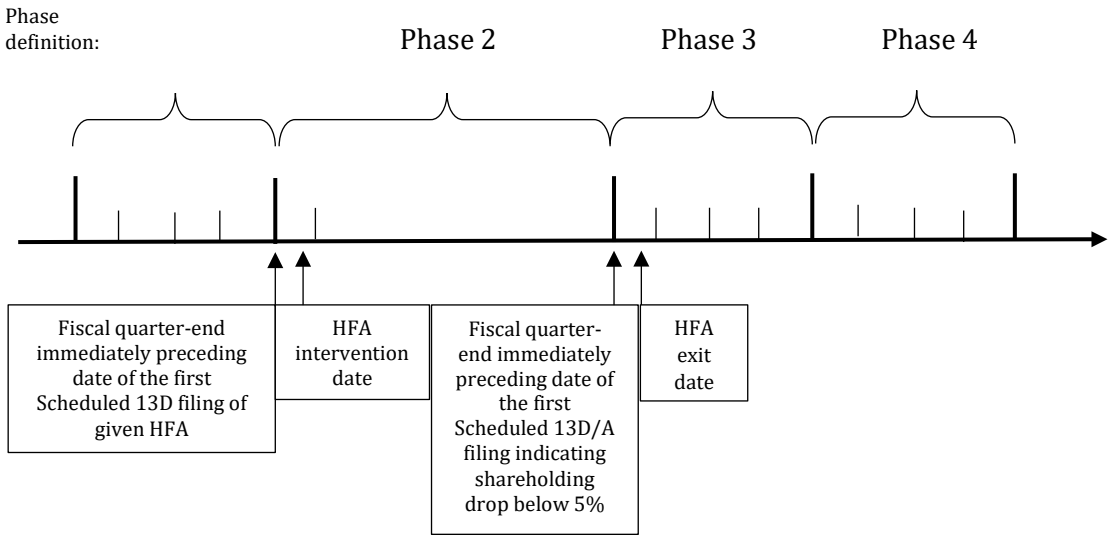
4.5.1 Investment horizon of HFA

The study considers four distinct periods in the investment horizon of HFA. Phase 1 is a pre-intervention phase comprising four fiscal quarters ending on the date of the fiscal quarter immediately preceding the date of the HFA intervention. Phase 2 is the following period that ends with the fiscal quarter immediately preceding the date that the HFA filed the first Scheduled 13D/A form indicating shareholding of the target company below 5%. Phases 3 and 4 are two subsequent periods of four quarters each (see Figure 4.1). Phase 3 represents a 'buffer' period against the case that influences of HFAs still strongly present shortly before[71] and after exiting the company. Phase 4 represents a period that long after HFAs' disposal of investments. Phase 2 has special significance because it is the period during HFAs' involvement of the portfolio companies when the strategy of earnings management is affected, presumably, most significantly.

Under such investment horizon setting, it is required that the HFA must exit the portfolio company (shareholding drops below 5%) prior to the end date of the fourth quarter of the 2014 fiscal year to be kept in the final sample. This requirement reduces PSM-matched target-control pairs from 833 to 477, which are used in the following univariate and multivariate analyses.

[71] In the first quarter of this phase, HFA still holds a significant (above 5%) portion of shares of the target company.

Figure 4.1 Investment horizon of HFA



Notes:
The figure illustrates how four distinct periods are identified for each HFA-targeted company. Phase 1 is the pre-intervention phase consisting of four quarters ending on the fiscal quarter-end date immediately preceding the intervention date. Phase 2 is the period starting with the fiscal quarter-end immediately preceding the intervention date and ending on the fiscal quarter-end immediately preceding the filing of the first 13D/A form indicating that shareholding drops below 5%. Phase 3 and Phase 4 are two subsequent periods consisting of four quarters each.

4.5.2 Univariate analyses

Table 4.4, Panel A shows univariate comparisons of mean aggregated REM (*REMRD*+*REMSGA*) between HFA-targeted (477 firms) and matched non-HFA-targeted (477 firms) groups. Companies intervened in by HFAs have aggregated REMs that are statistically indistinguishable from zero in phase 1, phase 3 and phase 4; with the exception of phase 2 (-0.4% of lagged total assets). This is precisely the period during which the HFA is actively involved in the target company; and suppresses managers' earning-increasing operational decisions that sacrifice future performance. In phase 3 and phase 4, HFA-targeted firms still present at a relatively low level, indicating that the profound positive influences from HFA persist even after the HFA has exited, whereas non-HFA-targeted firms show positive aggregated REM across all four phases (0.2% in phase1; 0.4% in phase 2; 0.8% in phase 3; 1.3% in phase 4) with a consistent increasing magnitude (see Figure 4.2).

Table 4.4, Panel B reports *t*-statistics for tests of differences in mean aggregated REM between the groups at each period. Phase 2 through phase 4 show significant

differences in the mean level of aggregated REM. This is consistent with the previous interpretation that HFAs' influence persists without reversal for, at least, 8 quarters after exiting the portfolio company.

Table 4.4 Univariate analysis of aggregated REM (REMRD+REMSGA)

Panel A: Mean aggregated REM in each phase for HFA-targeted and non-HFA-targeted companies				
Phase	1	2	3	4
Target firms	0.004	-0.004	0.001	0.0004
Test of zero mean (t-stat)	1.828	-3.142***	0.438	0.150
Non-targeted firms	0.002	0.004	0.008	0.013
Test of zero mean (t-stat)	0.825	3.076***	2.834***	5.083***

Panel B: Univariate comparison of mean aggregated REM in each phase between HFA-targeted and non-HFA-targeted companies				
Phase	1	2	3	4
Target vs. Non-target (t-stat)	-0.829	4.401***	2.375**	3.536***

Notes:

The sample consists of a total of 954 companies: 477 HFA-targeted companies between 2002 and 2014 fiscal years, together with 477 PSM matched non-HFA-targeted companies. Quarterly financial data are obtained from COMPUSTAT North America Quarterly (daily update). The estimation of the aggregate measure of real earnings management (REM) is calculated as the sum of residual of equation (4.2) and equation (4.3) and multiplied by -1 so that a positive value is consistent with income-increasing REM (Gunny, 2010).

Phases are defined as follows: (1) denotes the pre-intervention phase comprising four fiscal quarters ending on the date of the fiscal quarter immediately preceding the date of the HFA intervention. (2) is the period starting with the fiscal quarter-end immediately preceding the intervention date and ending with the fiscal quarter immediately preceding the date the HFA filed the first Scheduled 13D/A form indicating shareholding of the target company below 5%. (3) and (4) are two subsequent periods of four quarters each. Those for control observations are pseudo phases equal to those of corresponding matched treated ones.

Panel A shows the mean aggregated REM measure in each phase for treated and control groups separately. *t*-statistics for tests of zero means are shown immediately below. Panel B shows the results of univariate comparisons of mean aggregated REM measure between the two groups (two-tailed t-tests).

***, ** and * denote statistical significance levels of 0.01, 0.05, and 0.10, respectively (two-tailed).

Figure 4.2 Aggregated REM patterns in each phase around HFA intervention

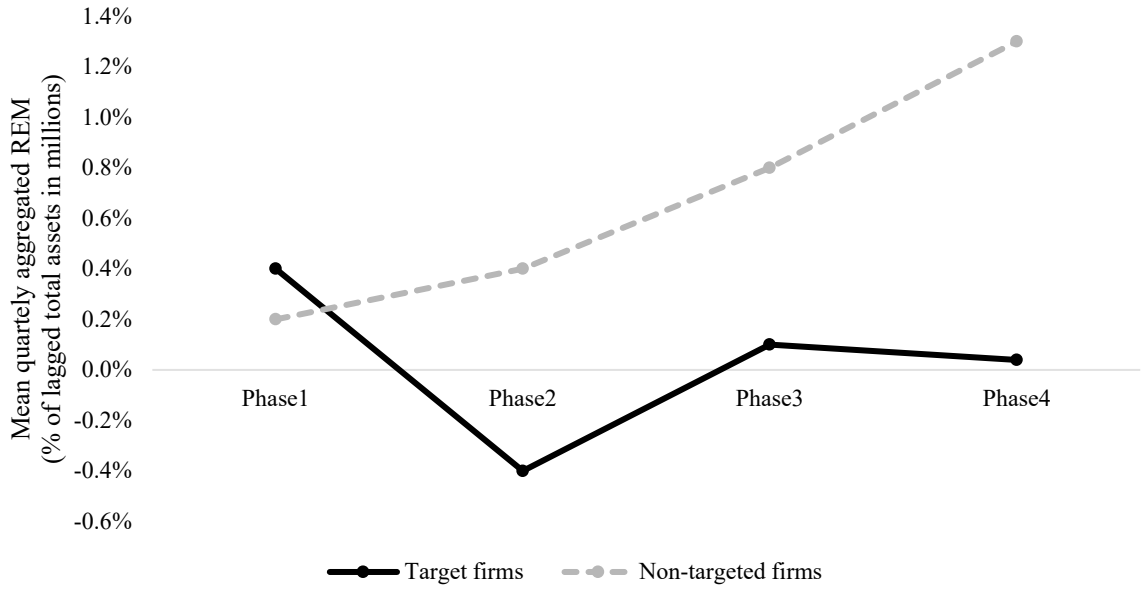


Table 4.5 and Figure 4.3 shows univariate comparison and pattern between the two groups across the four phases in terms of the level of abnormal accruals. For both groups, the mean levels of abnormal accruals are negative and significantly different from zero, suggesting earnings reserve/smoothing are the main objectives of AEM for firms in the sample. The control group keeps steady from phase 1 to phase 2 followed by a constant and steep decline in phase 3 and phase 4, which reflects the common trend of ever-tightening SEC scrutiny over time. However, for the HFA-targeted group, a sudden bump can be observed from phase 1 to phase 2, which matches the expectation that the portion of EM loss from reduced REM is compensated via increasing AEM when HFA is involved in the portfolio company. Such reallocation of EM can, on the one hand, smooth the transition by avoiding sudden earning drop and resistance from other stakeholders; on the other hand, it can protect HFAs' own interests at the point of cash in (through signalling). Unlike that of aggregated REM, the effect on AEM does not persist after exiting. One plausible reason is that it is offset by the strong contemporary external force observed from the control group.

Table 4.5 Univariate analysis of abnormal accruals (AEM)

Panel A: Mean abnormal accruals in each phase for HFA-targeted and non-HFA-targeted companies				
Phase	1	2	3	4
Target firms	-0.020	-0.009	-0.020	-0.018

Test of zero mean (t-stat)	-7.015***	-2.856***	-3.772***	-3.987***
Non-targeted firms	-0.009	-0.009	-0.016	-0.021
Test of zero mean (t-stat)	-2.605***	-3.617***	-3.997***	-4.581***

Panel B: Univariate comparison of mean abnormal accruals in each phase between HFA-targeted and non-HFA-targeted companies				
Phase	1	2	3	4
Target vs. Non-target (t-stat)	2.704***	-0.010	0.631	-0.453

Notes:

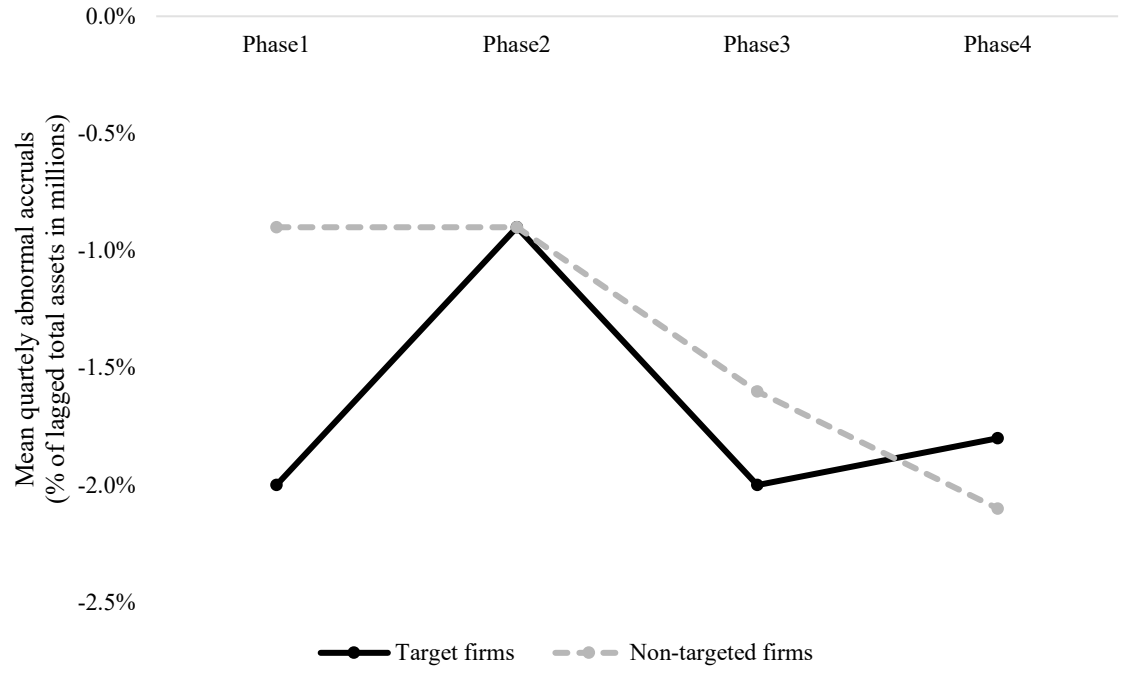
The sample consists of a total of 954 companies: 477 HFA-targeted companies between 2002 and 2014 fiscal year, together with 477 PSM matched non-HFA-targeted companies. Quarterly financial data are obtained from COMPUSTAT North America Quarterly (daily update). The estimations of the accrual-based earnings management (AEM) are residual terms of equation (4.4).

Phases are defined as follows: (1) denotes the pre-intervention phase comprising four fiscal quarters ending on the date of the fiscal quarter immediately preceding the date of the HFA intervention. (2) is the period starting with the fiscal quarter-end immediately preceding the intervention date and ending with the fiscal quarter immediately preceding the date the HFA filed the first Scheduled 13D/A form indicating shareholding of the target company below 5%. (3) and (4) are two subsequent periods of four quarters each. Those for control observations are pseudo phases equal to those of corresponding matched treated ones.

Panel A shows mean abnormal accruals in each phase for treated and control groups separately. *t*-statistics for tests of zero means are shown immediately below. Panel B shows results of univariate comparisons of mean abnormal accrual measure between the two groups (two-tailed t-tests).

***, ** and * denote statistical significance levels of 0.01, 0.05, and 0.10, respectively (two-tailed).

Figure 4.3 Abnormal accruals patterns in each phase around HFA intervention



For inter-group comparison reported in Table 4.5, Panel B, the difference is significant only at phase 1. From Figure 4.3, it is evident that the insignificance in the following phases is caused by dilution of the large difference in phase 1. As a result, in order to gather a clearer view, the next section presents multivariate tests employing the 'difference-in-differences' specification that would compensate/align such 'pre-treatment' condition. Taken together, univariate tests provide initial evidence supporting the hypothesis that HFA intervention induces a drop of REM as well as a rise of AEM.

4.5.3 Multivariate analysis

Despite initial evidence revealed by the univariate tests, two concerns remain that need to be addressed in a multivariate setting. First, as illustrated in Figure 4.3, endogeneity stemming from *ex ante* differences and the common trend has to be controlled. Therefore, model (4.4) employs a difference-in-differences (DiD) specification[72] that is capable of aligning the pre-treatment conditions and offsetting the market-wise concurrent trend. Second, it is well documented that HFA often promotes multi-dimensional changes in the target firm (Cheng et al., 2012). Thus, one might argue that any fluctuations observed in EM measures could be driven by HFA's indirect impact on other EM determinants, rather than by their intentional and direct effects on strategic choice of earnings management techniques. To accommodate such concern, following Wongsunwai (2013), the study further adds controls of EM determinants including: industry fixed effects (*Dindustry*), return on assets (*ROA*), book to market ratio (*BTM*), financial leverage (*LEV*), sales growth (*Growth*), natural

[72] According to Bertrand et al. (2004) and Lechner (2011), the limitations of this method lie in the fulfilment of its assumptions. However, they are concerns only if DiD was used as a standalone quasi-experimental mechanism, which will be greatly eliminated if employed along with the PSM. This Chapter can be considered fulfilled the three assumptions for the reasons as following. First, for the assumption that intervention allocation should not be determined by baseline outcome, the study added the main dependent variables back to the matching model that yield non-significant effect. These indicate earnings management is not likely a triggering criteria of HFAs' stock picking. Second, regarding to the assumption that comparison groups should have same pre-intervention outcome trend, univariate analyses reported in Section 4.5.2 can be seen as illustrated the point. Third, in terms of the assumption that the interventions should be as good as random, conditional on time and group fixed effects, the study design employs drastically stricter criteria than what Austin (2011b)has suggested as well as the ones used in previous papers (Cheng et al., 2012, Cheng et al., 2015).

logarithm of total assets (*Size*) and a dummy for the reputation of the firm's external auditor (*BIG*). See Appendix C for details of variable definitions.

$$\begin{aligned} AbnormalEM_t = {} & \alpha_0 + \alpha_1 Phase2 \times Target + \alpha_2 Phase3 \times Target \\ & + \alpha_3 Phase4 \times Target + \alpha_4 Target + \alpha_5 Phase2 + \alpha_6 Phase3 \\ & + \alpha_7 Phase4 + \alpha_8 ROA_t + \alpha_9 BTM_t + \alpha_{10} LEV_t + \alpha_{11} Growth_t \\ & + \alpha_{12} Size_t + \alpha_{13} BIG_t + \alpha_{14} Dindustry + \varepsilon_t \end{aligned} \quad (4.5)$$

Table 4.6 Descriptive statistics and correlations of final sample

Panel A: Descriptive statistics of final sample					
Variables	N	Mean	Q1	Median	Q3	SD
REMRD	15717	0	0	0.010	0.020	0.020
REMSGA	15717	0	-0.020	0	0.030	0.080
AEM	15880	-0.010	-0.050	-0.010	0.020	0.170
ROA	16013	-0.010	-0.010	0	0.020	0.140
BTM	15901	3.400	0.330	0.580	0.950	0.335
LEV	16013	0.230	0.030	0.180	0.350	0.260
Growth	15919	0.100	-0.070	0.010	0.090	2.480
Size	16013	6.140	4.840	6.110	7.470	1.990
BIG	15226	0.720	0	1	1	0.450

Panel B: Pearson correlation matrix										
Variables		A	B	C	D	E	F	G	H	I
REMRD	A	1								
REMSGA	B	0.063***	1							
AEM	C	-0.007	0.017**	1						
ROA	D	0.056***	-0.159***	-0.109***	1					
BTM	E	0	0.001	0.001	0.012	1				
LEV	F	0.020**	0.066***	0.026***	-0.047***	0.010	1			
Growth	G	-0.025***	0.031***	0.008	-0.003	0	0.017**	1		
Size	H	0.022***	0.010	-0.092***	0.189***	0.012	0.202***	-0.011	1	
BIG	I	0.006	-0.036***	-0.049***	0.067***	-0.084***	0.117***	0.006	0.413***	1

Notes:

*, **, *** Indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Panel A reports descriptive statistics of variables used in the multivariate regressions. Control firms (where Target=0) are identified as firms that have never been targeted by hedge funds during the sample period but have the closest propensity scores to target firms.

Panel A of Table 4.6 reports descriptive statistics of variables in the final sample used in the multivariate regressions. As this study uses actual instead of the absolute value of EM measurements, the means of dependent variables *REMRD*, *REMSGA* and *AEM* are 0, 0 and -0.01, respectively and the medians are 0.01, 0, -0.01, respectively. The Pearson correlations reported in Panel B of Table 4.6 show that REMs via R&D and

SG&A are positively and significantly correlated, indicating that these two techniques might be commonly used together as parts of an expenditure-cutting strategy (Zang, 2012). Interestingly, although it is observed that high quality auditors do have a deterrence effect on AEM as expected, the coefficient between BIG and REMSGA still exhibits strong negative correlation.

Table 4.7 Real activity and accrual-based earnings management regressions

$$AbnormalEM_t = \alpha_0 + \alpha_1 Phase2 \times Target + \alpha_2 Phase3 \times Target + \alpha_3 Phase4 \times Target + \alpha_4 Target + \alpha_5 Phase2 + \alpha_6 Phase3 + \alpha_7 Phase4 + \alpha_8 ROA_t + \alpha_9 BTM_t + \alpha_{10} LEV_t + \alpha_{11} Growth_t + \alpha_{12} Size_t + \alpha_{13} BIG_t + \alpha_{14} Dindustry + \varepsilon_t$$

	Dependent variables							
	(1)		(2)		(3)		(4)	
Dependent variable	Abnormal R&D		Abnormal SG&A		Abnormal Aggregate REM		Abnormal Accruals	
	REMRD		*REMSGA*		*REMAGG*		*AEM*	
	Coefficient	*t*-statistic	Coefficient	*t*-statistic	Coefficient	*t*-statistic	Coefficient	*t*-statistic
Phase2 × Target	-0.0083**	(-2.52)	-0.0011*	(-1.93)	-0.0094***	(-2.79)	0.0089*	(1.67)
Phase3 × Target	-0.0111**	(-2.52)	-0.0004	(-0.75)	-0.0116***	(-2.58)	0.0104	(1.33)
Phase4 × Target	-0.0130***	(-3.05)	-0.0012	(-1.61)	-0.0142***	(-3.26)	0.0084	(1.20)
Target	0.0014	(0.48)	0.0009**	(2.08)	0.0023	(0.80)	-0.0079**	(-2.06)
Phase2	0.0017	(0.71)	0.0006	(1.48)	0.0023	(0.96)	-0.0028	(-0.79)
Phase3	0.0056	(1.57)	0.0004	(0.95)	0.0060*	(1.67)	-0.0098**	(-2.14)
Phase4	0.0072***	(2.61)	0.0007	(1.52)	0.0079***	(2.82)	-0.0085	(-1.51)
ROA	-0.1240***	(-6.73)	0.0024	(0.35)	-0.1220***	(-5.32)	-0.0233	(-0.60)
BTM	0.0038***	(2.81)	0.0004***	(4.03)	0.0042***	(3.03)	0.0017	(1.25)

LEV	0.0149***	(4.89)	0.0020***	(3.84)	0.0169***	(5.36)	0.0172***	(3.04)
Growth	0.0010***	(3.43)	-0.0002***	(-4.70)	0.0008***	(2.65)	0.0008	(1.13)
Size	0.0039***	(8.93)	0.0004***	(3.52)	0.0042***	(9.10)	-0.0101***	(-10.60)
BIG	-0.0120***	(-6.95)	-0.0007*	(-1.83)	-0.0126***	(-7.12)	0.0034	(0.99)
Industry Fixed Effect	Yes		Yes		Yes		Yes	
Constant	0.0313***	(3.42)	0.0015***	(2.72)	0.0329***	(3.56)	-0.0329*	(-1.69)
No. of obs	14836		14836		14836		14898	
Adjusted R^2	0.069		0.020		0.069		0.042	

Notes:

The sample consists of a total of 954 companies: 477 HFA-targeted companies between 2002 and 2014 fiscal years, together with 477 PSM matched non-HFA-targeted companies. Quarterly financial data are obtained from COMPUSTAT North America Quarterly (daily update).

The estimation of the aggregate measure of real earnings management (REM) is calculated as the sum of residual of equation (4.2) and equation (4.3) and multiplied by -1 so that a positive value is consistent with income-increasing REM (Gunny, 2010). The estimations of the accrual-based earnings management (AEM) are residual terms of equation (4.4).

All continuous variables are centralised at their respective mean.

Phases are defined as follows: (1) denotes the pre-intervention phase comprising four fiscal quarters ending on the date of the fiscal quarter immediately preceding the date of the HFA intervention. (2) is the period starting with the fiscal quarter-end immediately preceding the intervention date and ending with the fiscal quarter immediately preceding the date the HFA filed the first Scheduled 13D/A form indicating shareholding of the target company below 5%. (3) and (4) are two subsequent periods of four quarters each. Those for control observations are pseudo phases equal to those of the corresponding matched treated ones.

***, ** and * denote statistical significance levels of 0.01, 0.05, and 0.10, respectively.

Table 4.7 presents the regression results of equation (4.5). Estimation on interaction terms indicates the difference of differences between target and control firms compared to *Phase1* (omitted benchmark).

Estimated coefficients on interaction term *Phase2 × Target* are statistically significant and negative in column (1) through column (3), indicating, as predicted, that during HFA's involvement, the target firms' earning-increasing manipulations via real activities are significantly lower than their pre-event level. Specifically, REM through reducing R&D expenditure reduced 0.8% (p<0.05); REM by cutting SG&A expense decreased 0.1% (p<0.1); and aggregated abnormal REM level dropped by 0.9% (p<0.01). The findings complement prior literature such as Brav et al. (2016b) who documented that subsequent to HFA intervention, target firms' innovation, measured by pattern quality and quantity is significantly improved, which indicates that HFAs are specialised in leveraging their future return through increasing firms' long-term competitiveness. They also support **Hypothesis 1** that REM decreases after HFA intervention. Moreover, coefficients on long-term effect indicators *Phase3 × Target* and *Phase4 × Target* show that abnormal R&D and aggregated REM continually decrease even after HFA cashes-in, suggesting that performance and long-term-focused strategic changes brought by HFA are far-reaching, which are consistent with Briggs (2007), Brav et al. (2008b) and Clifford (2008).

Column (4) exhibits a significant 0.89% increase (*Phase2 × Target*; p>0.1) of accrual-based abnormal earnings in Phase 2 for target firms relative to that of control firms, indicating an AEM increase effect during the presence of HFA. Different from that of R&D and aggregated REM, such effect disappears immediately after HFA disposal of investment, which reflects the reverting nature of AEM (DeFond and Park, 2001, Dechow and Dichev, 2002). The result is in accordance with the **Hypothesis 2**.

To further validate the correlation between REM and AEM when HFA presents is a result of their strategical earning reallocation, the study further creates a sub-sample that contains all observations of HFA-targeted firms at Phase 2; and tests Model 4.6.

$$REMAGG_t = \alpha_0 + \alpha_1 AEM_t + \alpha_2 ROA_t + \alpha_3 BTM_t + \alpha_4 LEV_t + \alpha_5 Growth_t + \alpha_6 Size_t + \alpha_7 BIG_t + \alpha_8 Dindustry + \varepsilon_t \quad (4.6)$$

Table 4.8 Relationship between REM and AEM for HFA targeted firms in Phase 2

$REMAGG_t = \alpha_0 + \alpha_1 AEM_t + \alpha_2 ROA_t + \alpha_3 BTM_t + \alpha_4 LEV_t + \alpha_5 Growth_t + \alpha_6 Size_t + \alpha_7 BIG_t + \alpha_8 Dindustry + \varepsilon_t$		
	(5)	
Sub-sample	HFA targeted firms in Phase 2	
Dependent variable	Abnormal Aggregate REM	
	REMAGG	
	Coefficient	*t*-statistic
AEM	-0.00783*	(-1.75)
ROA	-0.112***	(-7.30)
BTM	0.00475***	(5.75)
LEV	0.0245***	(3.49)
Growth	0.00558*	(1.87)
Size	0.00824***	(7.14)
BIG	-0.0265***	(-6.47)
Industry Fixed Effect	Yes	
Constant	-0.0368***	(-2.70)
No. of obs	2964	
Adjusted R^2	0.182	

Notes:

The sub-sample consists of a total of 477 HFA-targeted companies between 2002 and 2014 fiscal years at Phase 2 of HFA's investment horizon, which defined as the period starting with the fiscal quarter-end immediately preceding the intervention date and ending with the fiscal quarter immediately preceding the date the HFA filed the first Scheduled 13D/A form indicating shareholding of the target company below 5%.

Quarterly financial data are obtained from COMPUSTAT North America Quarterly (daily update).

The estimation of the aggregate measure of real earnings management (REM) is calculated as the sum of residual of equation (4.2) and equation (4.3) and multiplied by -1 so that a positive value is consistent with income-increasing REM (Gunny, 2010). The estimations of the accrual-based earnings management (AEM) are residual terms of equation (4.4).

***, ** and * denote statistical significance levels of 0.01, 0.05, and 0.10, respectively.

As shown in Table 4.8, at Phase 2 when HFAs present in target firms, the aggregated REM is significantly negatively associated with AEM (p<0.1), which supports the

interpretation that the rise of REM and drop of AEM is a result of HFA's strategical earning reallocation.

Overall, these results match the expectation that HFAs reallocate EMs from excessive REM to AEM. At phase 2 when HFAs are actively involved in the target companies, they show a distinct suppression effect on managers' earning-increasing operational REM that might sacrifice future performance.

4.5.4 Robustness test of alternative explanation

One concern of the findings presented is the potential linkage between the pre-intervention level of earnings management and being a target of HFA. In other words, HFA might simply picked companies with low REM and high AEM, which renders findings merely an observation of HFA stock picking. Therefore, in a set of untabulated tests, this study added *REMRD*, *REMSGA*, *REMAGG and AEM* both individually and in combination into PSM model (4.1). Results show no significant coefficient on these measures, suggesting that pre-existing earnings management not affect HFAs' choice of portfolio firm.

4.6 Concluding remarks

This chapter examines the short-term and long-term effects of HFA intervention on target firms' strategic choice between real-activity-based and accrual-based earnings management techniques. Findings suggest the earning-increasing REM via reducing/postponing R&D and/or SG&A expenditures decreases significantly during the HFA's involvement in the firm. Meanwhile, the overall REM suppression persists without reversal even after the HFA exits the portfolio company. In contrast, accrual-based earnings management is observed a significant boost when HFA presents in the firm; but the increase disappears with the HFA's disposal of share. Taken together, findings support the theory that HFAs rectify pre-existing REM that is harmful to a firm's long-term return. However, such actions have to be compensated for via inflating AEM which is not harmful in a way that allowing excessive REM would be; but is consistent with the HFA's interests in terms of easing

other stakeholders' resistance and preserving target firm's value at the point of their scheduled exit.

Results of this chapter contribute to the literature by, first, illustrating that HFA protects the target firm's short- and long-term value via suppressing managers' myopic intention of inflating reported earnings at the cost of future performance. This provides new evidence supporting prior views that HFA delivers remedies to the target firm's decision making and corporate governance in the long run. Second, this study also contributes to the extant literature on the effect of institutional investors on financial reporting quality in the context of the new breed of investor activism. Finally, this chapter answers the calls of Brav et al. (2008b), Clifford (2008) and Klein and Zur (2011) that HFA should not be constrained by legislative/regulative changes as suggested by petitioners (Watchtell, 2011).

Different from chapter 2 and 3 that focus on giving examples of indirect perceptive impacts from blockholders, this chapter supplements them through shifting focus to HFA's direct and tangible influences on corporate governance. Taken together, findings in chapter 4 support the arguments that different types of blockholder show different effects on agency conflicts, and eventually, corporate governance, which usually opposite to traditionally over-simplified belief (Shleifer and Vishny, 1997). Therefore, rulemakers should take great cautious especially when intuitions are tempting.

Indeed, managerial discretion exists in every aspect of business operations. The choice of REM vs. AEM is merely a compromise due to data unavailability. It would be both interesting and meaningful for future research to examine other strategic changes induced by HFA; preferably using insider data to reveal not only consequences but also mechanisms through which such changes are implemented.

Chapter 5

Conclusion

Chapter 5 Conclusion

The primary aim of this thesis has been to provide new insights into the impact of passive and active blockholders on corporate governance, in response to the recent worldwide regulatory movements of fencing large shareholders.

5.1 Key research findings

Two fundamental arguments connect three empirical chapters. First, while it is suggested that blockholding imposes the risk of deepening Type II agency conflicts in public companies, it is also argued that it serves a crucial corporate governance role that minimises the Type I agency problem. Therefore, whether tightening rules that might disincentivise blockholding is warranted can only be determined if expected net benefits were negative. Second, while theories suggest that concentration empowers blockholders to expropriate minority shareholders' interests, it is largely based on an over-simplified assumption that blockholders are homogeneous, sharing the same incentives and behaviours.

To this end, viewing corporate governance as the reflection of a firm's extant agency conflicts, this thesis challenges the 'bias' embedded in recent global movements, with a particular focus on disentangling the interactions between corporate governance and the nature of blockholders. I summarise key findings below categorised by their respective practical implications.

5.1.1 Heterogeneity vs. homogeneity of blockholders

Findings of this thesis suggest that more in-depth insights can be obtained from the consideration of distinguishing the nature and, more importantly, the underneath incentive of each blockholder. That is, it is important not to stereotype and/or over-simplify the relationship between blockholding and corporate governance. Specifically, whether, how and why the correlation between the presence of blockholders and corporate governance malfunction exists is ultimately determined by a specific

blockholder's nature, incentive, activeness and profit-making approach. This is also consistent with the view of Bebchuk and Jackson (2011) that rule-making should only be based on careful and detailed examination of real benefits and costs; rather than on intuitive appeal.

In chapter 2, contrary to extant research suggesting that control concentration monotonically enlarges the agency problem and, eventually, audit fees (Fan and Wong, 2005), findings suggest such a relationship depends on the nature of control. Specifically, the audit fee is the lowest for central state-controlled enterprises (SCEs) followed by local SCEs, which matches the expectation that the incentive effect is positively associated with state representatives' political stake. It is interesting to find that the voting rights level of state controlling shareholder (CS) is significantly negatively related to audit fee; whereas that of the non-state counterparts is significantly opposite. This supports the assertion that auditors are likely to recognise incentive alignment as the dominant effect introduced by state control, and the entrenchment effect as the threat posed by non-state control. Regarding the effect of control-enhancing mechanisms, results suggest that auditors tend to perceive two-right divergence for non-state CSs as intentional and a risk indicator; but see that for state CSs as the expanding of control chain, which wears away the risk mitigation effects.

To some extent at least, chapter 2 illustrates that control concentration, *per se*, does not necessarily impair corporate governance; rather CSs' unethical incentives and excessively large control without bonded ownership do.

In chapter 3, empirical results indicate that, relative to matched control firms, HFA targeted companies show a steady decrease trend in terms of audit fee after a short burst immediately following the intervention. Taking into account that audit fee, by itself, shows an inherent increasing trend over time, it is rather evident that HFA introduces net corporate governance improvement, even after the theoretically increased Type II conflicts have already been reflected in the fee.

Similarly, from the strategic aspect of corporate governance, HFA also presents an example of how blockholders can actively suppress manager's temptation to inflate reported earnings at the cost of future firm value. Moreover, their suppression effect

on harmful real activity-based earnings management persists without reversal even eight quarters after the disposal of investments.

This thesis provides a closer look at the complex interrelation between various aspects of blockholders and corporate governance. The key conclusion that can be drawn from this thesis' findings is that no rule is a 'one size fits all'.

5.1.2 The fear of the emergence of 'New'

It is intriguing that while extant empirical literature evinces rather one-sided support for HFA as a remedy for target firms' corporate governance (Brav et al., 2008b, Brav et al., 2009, Klein and Zur, 2009, Boyson and Mooradian, 2011, Cheng et al., 2012, Bebchuk et al., 2015, Brav et al., 2016b), public attention seems extremely negative towards this new breed of investor activism (Katelouzou, 2012). Chapter 2 provides a convincing explanation that our fear of uncertainties associated with unknown could be the culprit.

To the best of author's knowledge, the analysis in chapter 3 is the first to illustrate the dynamics between HFA intervention and audit fees, which contributes to the auditing literature on the influence of ownership structure on audit pricing. Specifically, findings suggest that, in the US markets, prior to HFA intervention, target firms exhibit no significant differences from the control firms in terms of audit charge, whereas target firms pay significantly higher fees for the year of engagement; but less for the first through the fifth post-intervention audit engagements. In addition, results show that audit fee follows a reverse U- shaped pattern across post-event years. Moreover, the additional analysis also illustrates that the drop in fees within the event window [+2, +5] (event Year0 being the fiscal year the intervention took place) can be explained by auditor-HFA relationship/experiences. Taken together, these results are in accordance with the expectation that auditors' risk perception towards HFA follows a 'learning curve'.

The analysis deepens our understanding of the effects of HFA intervention through a transitional view. Specifically, on the one hand, the study illustrates that even highly sophisticated market practitioners as auditors may experience a learning curve

towards the new burst of HFA due to initial concerns originating from the unknown. On the other hand, findings indicate that, over time, the initially perceived uncertainty does ease as understanding increases; this finding supplements and supports extant HFA literature. Fundamentally, chapter 3 provides a possible explanation for the gap between the negative public reaction and positive empirical evidence towards HFA intervention, which helps to answer the practical question of whether HFA warrants any legislative/regulative response (Brav et al., 2008b) from another fresh angle. Based on these findings, I call for a more cautious response to regulatory proposals.

5.1.3 Balance is a necessity

In most cases, blockholding by no means represents an absolute form of power that dictates how a company operates (except in extreme scenarios when a single blockholder acquired an unchallenged portion of control as illustrated in chapter 2). Instead, the vast majority of blockholders may direct the company towards the direction desired only if they can convince other shareholders that doing so would be beneficial; or if they can make managers believe they will be able to convince other shareholders (Bebchuk and Jackson, 2011). Contrary to the traditional view that blockholding magnifies (Type II) agency conflicts, such practice is a process balancing power and interests among shareholders which, in fact, facilitates the effectiveness of corporate governance in both supervisory and strategic aspects. In this light, chapter 4 presents an empirical case.

Specifically, the outcome in chapter 4 is the first to illustrate the effect of HFA on earnings management; and lends support to the dynamic relation between REM and AEM (Zang, 2012, Cohen and Zarowin, 2010) in the context of HFA intervention. The study provides new evidence that supports prior views that HFA delivers remedies to the target firm's decision-making and corporate governance in the long run which, in turn, supports the view that HFA should not be constrained by further legislative/regulative changes as suggested by some petitioners. In particular, contrary to prior studies which conclude that active shareholders equally suppress REM and AEM, results of chapter 4 indicate that HFAs, in fact, reallocate portfolio companies' earnings management strategy instead. Using 2002-2016 quarterly fiscal data, propensity score-matched pairs and difference-in-differences design,

results show REMs via reducing/postponing R&D and SG&A expenses significantly negatively related to HFA intervention in the phase during HFAs' involvement in the portfolio company; and in the short-term and long-term phases that HFA exited. This indicates that not only HFAs suppressed managers' intention to deliver earnings at the cost of long-term performance; but also such beneficial influences persisted in the short and long period after HFA's disposal of shares. On the AEM side, chapter 4 reveals a significant increase at the phase when HFA present in the firm relative to the pre-event period. This also matches the expectation that targeted companies reallocate reduced earnings to AEM as a result of HFAs' demand for balancing stakes among stakeholders and earnings-smoothing.

5.2 Limitations and future research

Despite the author's best efforts, this research is subject to several limitations primarily due to data unavailability.

First, although the thesis consistently emphasises that blockholders' nature is an important determinant of their impact on corporate governance matters, it is fundamentally the incentive of each specific blockholder being the real driver behind their behaviours/decisions. While incentives are, to a great extent, determined by the nature, which is also one of the underlying assumptions of this thesis, it must be admitted that using nature as the proxy for incentive is merely a compromise simply due to the fact that the former is observable and the latter is not. This problem is the most prominent in chapter 2 where, on the one hand, the effects on audit fee from the CS's incentive effect and political influences could not be proportionally separated; and, on the other hand, the motivations behind voting-cash-flow-right separation cannot be identified on a case-by-case basis. Thus, future research into these issues can be fruitful if new techniques or database were applied to better precisely capture motivation factors.

Second, audit fee is used in two core chapters due to its relative neutrality and informativeness in terms of capturing risk perception. However, the 'black box' nature of the audit pricing process makes decoding results in detail difficult, if not impossible. For example, one limitation of chapter 3 is that while robust empirical evidence show that audit fee dynamics following HFA intervention are driven by risk perception changes, these results alone is still not sufficient for the author to proportionally decompose effects from individual risk elements within the 'risk premium package'. That is, under the empirical setting of the chapter, the event year proxies used can only effectively capture the overall effect consisting of litigation, residual litigation and non-litigation risks. Without proprietary insider data, there is no feasible way to measure or proxy for individual elements explicitly. Hence, future studies could address this problem by using alternative methodologies or data sources.

Third, tangible managerial discretion changes induced by blockholders can exist in many aspects of business operations. In chapter 4, author's choice of REM vs. AEM

is, again, a compromise due to data unavailability. It would be both interesting and meaningful for future research to examine other strategic changes induced by HFA; preferably, using insider data to reveal not only consequences, but also mechanisms through which such changes are implemented.

Fourth, although propensity score matching method gained much popularity recently, which does address observable endogeneity caused by treatment effect well (Austin et al., 2007), it must be admitted that there are still potentially other unobservable endogenous matters remain. However, since, at the time of writing up, to the best of author's knowledge, there is still no agreed solution to incorporate other countermeasures along with PSM based design while keeping results economically interpretable, the author choose to follow common approach as per research published in top-tier journals, which is subject to improve when new generally accepted method becomes available in the future.

Appendices

Appendix A Variable definitions of chapter 2

Variable		Definition
Dependent Variable		
LnFee	=	natural logarithm of total audit fee paid by the client to the auditor
Test Variables		
NS	=	1 if CS is an individual or privately controlled entity, and 0 otherwise. Omitted from regressions
SCECG	=	1 if the client's ultimate controlling shareholder is central government (affiliated) agencies, and 0 otherwise
SCELG	=	1 if the client's ultimate controlling shareholder is local government (affiliated) agencies, and 0 otherwise
STATE	=	1 if the client's ultimate controlling shareholder is either central government (affiliated) or local government (affiliated) agencies, and 0 otherwise
VOTING	=	percentage of voting rights possessed by the controlling shareholder
CASHFLOW	=	percentage of cash flow rights possessed by the controlling shareholder
CV	=	the ratio of controlling shareholder's cash flow rights over voting rights
SSpct	=	percentage of State Share in all outstanding shares
Pct2to10	=	aggregated shareholding percentage of 2nd to 10th largest shareholder (direct shareholding as reported in the annual report)
Control Variables		
Engagement Complexity		
LnASSET	=	natural logarithm of the client's total asset at the end of the fiscal year
MOpinion	=	1 if the client received a modified audit report, and 0 otherwise
LagDays	=	number of days from fiscal year-end to the signature date of the audit report
NEWSHARE	=	1 if the client issued new equities within following 2 years, and 0 otherwise
CROSS	=	1 if the client cross-listed on Hong Kong Stock Exchange, and 0 otherwise
MA	=	1 if the client was involved in merger and acquisition within the fiscal year, and 0 otherwise
Auditor's Per-Unit Cost		
BIG4	=	1 if the auditor is one of the Big4, and 0 otherwise

ISA	=	1 if the auditor has 20 percent or higher market share in that industry and that year; 0 otherwise.
Corporate Governance Characteristics		
AuditCom	=	1 if audit committee established, and 0 otherwise
Dual	=	1 if the client's CEO also serves as chairman, and 0 otherwise
BoardIndy	=	percentage of non-executive directors on the board
ACIndy	=	number of non-executive directors within client's audit committee
Litigation Risk		
RA	=	year-end account receivable divided by year-end total assets
IA	=	year-end inventory divided by year-end total assets
GROWTH	=	change in sales scaled by previous year's sales
ZSCORE	=	probably of bankruptcy estimated by Altman's (1968) bankruptcy prediction model, where X = 1.2× (Working Capital / Total Assets) + 1.4× (Retained Earnings / Total Assets) + 3.3× (Earnings Before Interest and Taxes / Total Assets) + 0.6× (Market Value of Equity / Book Value of Total Liabilities) + 0.99× (Sales / Total Assets)
TENURE	=	number of years the auditor has worked for the client
INDEPENDENCE	=	1− audit fee/total audit fee of all (listed) clients of the auditor in the fiscal year
VAR	=	variability of the client's return; the standard deviation of residuals obtained from regressing client's daily return against an exchange-specific monthly index
LnMV	=	natural logarithm of the market value of the client at the end of the fiscal year
LEV	=	total debt scaled by total assets
ROA	=	operating return on average assets; calculated as earnings from operation scaled by begging and end of fiscal year average total assets
LOSS	=	1 if the net earning is below zero, and 0 otherwise
ST	=	1 if the client is at ST status, and 0 otherwise
Fixed Effects		
INDUSTRY	=	industry fixed effects indicator variables
YEAR	=	year fixed effects indicator variables

Appendix B Variable definitions of chapter 3

Variable	Definition **(COMPUSTAT legacy item # in parentheses)**
D_{target}	Dummy variable equals 1 if the firm is targeted by HFA in the current fiscal year, and 0 otherwise.
LOGMV	The natural logarithm of market capitalisation (in millions of dollars) (#199 * #25).
TobinQ	Tobin's Q, computed as (#34 + #9 + #199 * #25)/(#34 + #9 + #60).
Salegrowth	The growth rate of sales (#12) over previous fiscal year.
ROA	EBITDA/lagged assets (#18/#6).
LEV	Book leverage ratio = debt/(debt + book value of equity), computed as (#9 + #34)/(#9 + #34 + #60).
Dividend	Dividend per share, computed as (#21/#25).
RANDD	R&D scaled by lagged asset (#46/#6).
HHI	The Herfindahl-Hirschman index of sales in different business segments as reported by COMPUSTAT Historical Segment.
Analysts	Mean of aggregated quarterly number of analysts covering the firm as reported by I/B/E/S.
IOR	Aggregated institutional ownership as reported in Thomas Reuters 13f database.
LnAuditFee	Natural logarithm of total audit fee (in millions) paid by the client to the auditor in the current fiscal year. The item 'Audit Fees' reported in DEF 14A.
Dyear-1	Dummy variable equals 1 if the current year is the fiscal year immediately preceding HFA intervention, 0 otherwise.
Dyear0	Dummy variable equals 1 if the current year is the fiscal year that HFA intervention took place, 0 otherwise.
Dyear1	Dummy variable equals 1 if the current year is event Year+1, 0 otherwise.
Dyear2	Dummy variable equals 1 if the current year is event Year+2, 0 otherwise.
Dyear3	Dummy variable equals 1 if the current year is event Year+3, 0 otherwise.
Dyear4	Dummy variable equals 1 if the current year is event Year+4, 0 otherwise.
Dyear5	Dummy variable equals 1 if the current year is event Year+5, 0 otherwise.
LnAT	Natural logarithm of the client's total asset (#6) at the end of the current fiscal year.
BTM	Book to market ratio. Computed as #60/(#199 * #25).
INVT	year-end inventory divided by year-end total assets (#3/#6).
AR	year-end receivable divided by year-end total assets (#2/#6).
Seq	The number of business segments the auditee is operating in, as reported by COMPUSTAT Historical Segment.

Big4	Dummy variable equals 1 if the auditor is one of the Big4, and 0 otherwise.
Tenure	Number of continuous years the auditor has audited the client.
INDI	Fee dependence of the auditor on the auditee. Calculated as audit fee divided by total audit fee of all (listed) clients of the auditor in the current fiscal year.
EXP	The number of fiscal years an auditor name/brand is linked to a HFA, until the shareholding of auditee dropped below 5%.
NAF	Non-audit-fee calculated as item 'Total' minus item 'Audit Fees' as reported in DEF 14A.
LMO	Dummy variable equals 1 if modified audit opinion was issued in previous year, 0 otherwise.
ACsize	Number of directors in audit committee at the end of the current fiscal year.
Bsize	Number of directors on the board at the end of the current fiscal year.

Appendix C Variable definitions of chapter 4

Variable	Definition **(COMPUSTAT legacy item # in parentheses)**
Annual Data	(COMPUSTAT annually item # in parentheses)
D_{target}	Dummy variable equals 1 if the firm is targeted by HFA in the current fiscal year, and 0 otherwise.
LOGMV	The natural logarithm of market capitalisation (in millions of dollars) (#199 * #25).
TobinQ	Tobin's Q, computed as (#34 + #9 + #199 * #25)/(#34 + #9 + #60).
Salegrowth	The growth rate of sales (#12) over previous fiscal year.
ROA	EBITDA/lagged assets (#18/#6).
LEV	Book leverage ratio = debt/(debt + book value of equity), computed as (#9 + #34)/(#9 + #34 + #60).
Dividend	Dividend per share, computed as (#21/#25).
RANDD	R&D scaled by lagged asset (#46/#6).
HHI	The Herfindahl-Hirschman index of sales in different business segments as reported by COMPUSTAT Historical Segment.
Analysts	Mean of aggregated quarterly number of analysts covering the firm as reported by I/B/E/S.
Quarter Data	(COMPUSTAT quarterly item # in parentheses)
RND	Research and development (R&D) expenses (#4).
A	Total assets (#44).
MV	The natural logarithm of market value (#59*prccq).
Q	Tobin's Q (((#59*prccq) + #55 + #51 + #45) /#44).
INT	Internal funds (#8 + #5 + #4).
REMRD	Abnormal R&D expenditure. Calculated as -1 multiplied by the residual term of equation (4.2).
SGA	Selling, general and administrative (SG&A) Expenses (#1).
S	Total sales (#2).
DD	Indicator variable equals 1 when total sales (#2) decrease between t-1 and t, zero otherwise.
REMSGA	Abnormal SG&A expenditure. Calculated as -1 multiplied by the residual term of equation (4.3).
TA	Total accruals (#8 - #108).
AR	Account receivables (#103).
PPE	Gross property, plant and equipment (#118).
ROA	Return on assets (#69 / #44).
AEM	Abnormal accruals, the residual term of equation (4.4).
Targe	Indicator variable equals 1 if the firm is HFA-targeted, zero otherwise.
Phase1	Indicator variable equals 1 if the firm-quarter (pseudo for matched control firms) is in phase 1 of the corresponding event, zero otherwise.
Phase2	Indicator variable equals 1 if the firm-quarter (pseudo for matched control firms) is in phase 2 of the corresponding event, zero otherwise.

Phase3	Indicator variable equals 1 if the firm-quarter (pseudo for matched control firms) is in phase 3 of the corresponding event, zero otherwise.
Phase4	Indicator variable equals 1 if the firm-quarter (pseudo for matched control firms) is in phase 4 of the corresponding event, zero otherwise.
BTM	Book to market ratio (ceqq / #59*prccq).
Growth	The growth rate of sales (#2).
Size	The natural logarithm of total assets (#44).
BIG	Indicator variable equals 1 if the auditor is one of the Big4, zero otherwise.

List of References

List of References

Abbott, L. J., Parker, S., Peters, G. F. and Raghunandan, K. (2003) 'The Association between Audit Committee Characteristics and Audit Fees', *Auditing: A Journal of Practice & Theory,* 22(2), pp. 17-32.

Allen, F., Qian, J. and Qian, M. (2005) 'Law, finance, and economic growth in China', *Journal of Financial Economics,* 77(1), pp. 57-116.

Austin, P. C. (2008) 'A critical appraisal of propensity-score matching in the medical literature between 1996 and 2003', *Statistics in Medicine,* 27(12), pp. 2037-2049.

Austin, P. C. (2011a) 'An Introduction to Propensity Score Methods for Reducing the Effects of Confounding in Observational Studies', *Multivariate Behavioral Research,* 46(3), pp. 399-424.

Austin, P. C. (2011b) 'Optimal caliper widths for propensity-score matching when estimating differences in means and differences in proportions in observational studies', *Pharmaceutical Statistics,* 10(2), pp. 150-161.

Austin, P. C., Grootendorst, P. and Anderson, G. M. (2007) 'A comparison of the ability of different propensity score models to balance measured variables between treated and untreated subjects: a Monte Carlo study', *Statistics in Medicine,* 26(4), pp. 734-753.

Baber, W. R., Kang, S. H., Liang, L. and Zhu, Z. (2015) 'External Corporate Governance and Misreporting', *Contemporary Accounting Research,* 32(4), pp. 1413-1442.

Bae, G. S., Choi, S. U. K. and Rho, J. H. W. A. (2016) 'Audit Hours and Unit Audit Price of Industry Specialist Auditors: Evidence from Korea', *Contemporary Accounting Research,* 33(1), pp. 314-340.

Beasley, M., Carcello, J. and Hermanson, D. (1999) 'Fraudulent financial reporting: 1987-1997', *An analysis of US public companies. Committee of Sponsoring Organizations of the Treadway Commission*.

Beasley, M. S. (1996) 'An Empirical Analysis of the Relation between the Board of Director Composition and Financial Statement Fraud', *The Accounting Review,* 71(4), pp. 443-465.

Bebchuk, L. A., Brav, A. and Wei, J. (2015) 'THE LONG-TERM EFFECTS OF HEDGE FUND ACTIVISM', *Columbia Law Review,* 115(5), pp. 1085-1155.

Bebchuk, L. A. and Hamdani, A. (2009) 'The Elusive Quest for Global Governance Standards', *University of Pennsylvania Law Review,* 157(5), pp. 1263-1317.

Bebchuk, L. A. and Jackson, R. J. (2011) 'The law and economics of blockholder disclosure', *Harvard Law and Economics Discussion Paper,* (702), pp. 40-60.

Bebchuk, L. A., Kraakman, R. and Triantis, G. (2000) 'Stock pyramids, cross-ownership, and dual class equity: the mechanisms and agency costs of separating control from cash-flow rights', *Concentrated corporate ownership*: University of Chicago Press, pp. 295-318.

Bedard, J. C. and Johnstone, K. M. (2004) 'Earnings Manipulation Risk, Corporate Governance Risk, and Auditors' Planning and Pricing Decisions', *Accounting Review,* (no. 2), pp. 277.

Bell, T. B., Landsman, W. R. and Shackelford, D. A. (2001) 'Auditors' Perceived Business Risk and Audit Fees: Analysis and Evidence', *Journal of Accounting Research,* 39(1), pp. 35-43.

Beltratti, A., Bortolotti, B. and Caccavaio, M. (2012) 'The stock market reaction to the 2005 split share structure reform in China', *Pacific-Basin Finance Journal,* 20(4), pp. 543-560.

Ben Ali, C. and Lesage, C. (2013) 'Audit pricing and nature of controlling shareholders: Evidence from France', *China Journal of Accounting Research,* 6(1), pp. 21-34.

Bentley, K. A., Omer, T. C. and Sharp, N. Y. (2013) 'Business Strategy, Financial Reporting Irregularities, and Audit Effort', *Contemporary Accounting Research,* 30(2), pp. 780-817.

Bertrand, M., Duflo, E. and Mullainathan, S. (2004) 'How Much Should We Trust Differences-In-Differences Estimates?*', *The Quarterly Journal of Economics,* 119(1), pp. 249-275.

Boyson, N. M. and Mooradian, R. M. (2007) 'Hedge funds as shareholder activists from 1994–2005', *Northeastern University-College of Business Administration*.

Boyson, N. M. and Mooradian, R. M. (2011) 'Corporate governance and hedge fund activism', *Review of Derivatives Research,* 14(2), pp. 169-204.

Brandt, L. and Li, H. (2003) 'Bank discrimination in transition economies: ideology, information, or incentives?', *Journal of Comparative Economics,* 31(3), pp. 387-413.

Brav, A., Jiang, W. and Kim, H. (2009) 'Hedge Fund Activism: A Review', *Foundations and Trends in Finance,* 4(3), pp. 185-246.

Brav, A., Jiang, W., Ma, S. and Tian, X. (2016a) 'How Does Hedge Fund Activism Reshape Corporate Innovation?', *National Bureau of Economic Research Working Paper Series,* No. 22273.

Brav, A., Jiang, W., Ma, S. and Tian, X. 2016b. How Does Hedge Fund Activism Reshape Corporate Innovation? : National Bureau of Economic Research, Inc, NBER Working Papers: 22273.

Brav, A., Jiang, W., Partnoy, F. and Thomas, R. S. (2008a) 'The Returns to Hedge Fund Activism', (no. 6), pp. 45.

Brav, A., Jiang, W. E. I., Partnoy, F. and Thomas, R. (2008b) 'Hedge Fund Activism, Corporate Governance, and Firm Performance', *Journal of Finance,* 63(4), pp. 1729-1775.

Briggs, T. W. (2007) 'Corporate Governance and the New Hedge Fund Activism: An Empirical Analysis', *Journal of Corporation Law,* 32(4), pp. 681-737.

Bronson, S. N., Ghosh, A. and Hogan, C. E. (2017) 'Audit Fee Differential, Audit Effort, and Litigation Risk: An Examination of ADR Firms', *Contemporary Accounting Research,* 34(1), pp. 83-117.

Bushee, B. J. (1998) 'The Influence of Institutional Investors on Myopic R&D Investment Behavior', *The Accounting Review,* 73(3), pp. 305-333.

Carcello, J. V., Hermanson, D. R., Neal, T. L. and Riley, R. A. (2002) 'Board Characteristics and Audit Fees*', *Contemporary Accounting Research,* 19(3), pp. 365-384.

Carcello, J. V. and Neal, T. L. (2000) 'Audit Committee Composition and Auditor Reporting', *Accounting Review,* 75(4), pp. 453.

Carcello, J. V. and Palmrose, Z.-V. (1994) 'Auditor Litigation and Modified Reporting on Bankrupt Clients', *Journal of Accounting Research,* 32, pp. 1-30.

Cheffers, M. and Whalen, D. (2010) *Audit Fees and Non-Audit Fees - A Seven Year Trend*. USA: Audit Analytics. Available at: http://www.auditanalytics.com/doc/AuditAnalytics_NonAuditFees_7Years_03-10.pdf (Accessed: 2nd December 2016).

Chen, G., Firth, M. and Xu, L. (2009) 'Does the type of ownership control matter? Evidence from China's listed companies', *Journal of Banking & Finance,* 33(1), pp. 171-181.

Chen, H., Chen, J. Z., Lobo, G. J. and Wang, Y. (2010) 'Association Between Borrower and Lender State Ownership and Accounting Conservatism', *Journal of Accounting Research,* 48(5), pp. 973-1014.

Cheng, C. S. A., Huang, H. H. and Li, Y. (2015) 'Hedge Fund Intervention and Accounting Conservatism', *Contemporary Accounting Research,* 32(1), pp. 392-421.

Cheng, C. S. A., Huang, H. H., Yinghua, L. and Stanfield, J. (2012) 'The Effect of Hedge Fund Activism on Corporate Tax Avoidance', *Accounting Review,* 87(5), pp. 1493-1526.

Choi, J. H., Kim, J. B., Liu, X. and Simunic, D. A. (2008a) 'Audit pricing, legal liability regimes, and big 4 premiums: Theory and cross-country evidence', *Contemporary Accounting Research,* 25(1), pp. 55-99+2+9.

Choi, J. H., Kim, J. B., Liu, X. and Simunic, D. A. (2008b) 'Audit Pricing, Legal Liability Regimes, and Big 4 Premiums: Theory and Cross-country Evidence*', *Contemporary Accounting Research,* 25(1), pp. 55-99.

Chow, G. C. (2002) *China's economic transformation.* Blackwell Oxford.

Chow, L. M.-y., Chau, G. K.-k. and Gray, S. J. (1995) 'Accounting Reforms in China: Cultural Constraints on Implementation and Development', *Accounting & Business Research (Wolters Kluwer UK),* 26(1), pp. 29-49.

Christensen, B. E., Glover, S. M., Omer, T. C. and Shelley, M. K. (2016) 'Understanding Audit Quality: Insights from Audit Professionals and Investors', *Contemporary Accounting Research,* 33(4), pp. 1648-1684.

Claessens, S., Djankov, S., Fan, J. P. H. and Lang, L. H. P. (2002) 'Disentangling the Incentive and Entrenchment Effects of Large Shareholdings', *The Journal of Finance,* 57(6), pp. 2741-2771.

Clarke, D. C. (2003) 'Corporate governance in China: An overview', *China Economic Review,* 14(4), pp. 494-507.

Clifford, C. P. (2008) 'Value creation or destruction? Hedge funds as shareholder activists', *Journal of Corporate Finance,* 14(4), pp. 323-336.

Coffee Jr, J. C. and Palia, D. (2016) 'The Wolf at the Door: The Impact of Hedge Fund Activism on Corporate Governance', *Journal of Corporation Law,* 41(3), pp. 545-607.

Cohen, D. A. and Zarowin, P. (2010) 'Accrual-based and real earnings management activities around seasoned equity offerings', *Journal of Accounting and Economics,* 50(1), pp. 2-19.

Cohen, J., Krishnamoorthy, G. and Wright, A. (2010) 'Corporate Governance in the Post-Sarbanes-Oxley Era: Auditors' Experiences*', *Contemporary Accounting Research,* 27(3), pp. 751-786.

Cohen, J., Krishnamoorthy, G. and Wright, A. M. (2002) 'Corporate Governance and the Audit Process', *Contemporary Accounting Research,* 19(4), pp. 573-594.

Cohen, J. R. and Hanno, D. M. (2000) 'Auditors' Consideration of Corporate Governance and Management Control Philosophy in Preplanning and Planning Judgments', *Auditing: A Journal of Practice & Theory,* 19(2), pp. 133.

Cohen, J. R., Krishnamoorthy, G. and Wright, A. M. (2007) 'The Impact of Roles of the Board on Auditors' Risk Assessments and Program Planning Decisions', *Auditing: A Journal of Practice & Theory,* 26(1), pp. 91-112.

Cohen, J. R., Krishnamoorthy, G. and Wright, A. M. (2008) 'Form versus Substance: The Implications for Auditing Practice and Research of Alternative Perspectives on Corporate Governance', *Auditing: A Journal of Practice & Theory,* 27(2), pp. 181-198.

Craswell, A., Stokes, D. J. and Laughton, J. (2002) 'Auditor independence and fee dependence', *Journal of Accounting and Economics,* 33(2), pp. 253-275.

DeAngelo, L. E. (1981) 'Auditor size and audit quality', *Journal of Accounting and Economics,* 3(3), pp. 183-199.

Dechow, P., Ge, W. and Schrand, C. (2010) 'Understanding earnings quality: A review of the proxies, their determinants and their consequences', *Journal of Accounting and Economics,* 50(2), pp. 344-401.

Dechow, P. M. and Dichev, I. D. (2002) 'The Quality of Accruals and Earnings: The Role of Accrual Estimation Errors', *The Accounting Review,* 77, pp. 35-59.

Dechow, P. M. and Skinner, D. J. (2000) 'Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators', *Accounting Horizons,* 14(2), pp. 235-250.

Dechow, P. M., Sloan, R. G. and Sweeney, A. P. (1995) 'Detecting Earnings Management', *The Accounting Review,* 70(2), pp. 193-225.

DeFond, M. L. (2010) 'Earnings quality research: Advances, challenges and future research', *Journal of Accounting and Economics,* 50(2), pp. 402-409.

DeFond, M. L. and Park, C. W. (2001) 'The Reversal of Abnormal Accruals and the Market Valuation of Earnings Surprises', *The Accounting Review,* 76(3), pp. 375-404.

DeFond, M. L., Wong, T. J. and Li, S. (1999) 'The impact of improved auditor independence on audit market concentration in China', *Journal of Accounting and Economics,* 28(3), pp. 269-305.

Demirkan, S. and Zhou, N. (2016) 'Audit Pricing for Strategic Alliances: An Incomplete Contract Perspective', *Contemporary Accounting Research,* 33(4), pp. 1625-1647.

Dhaliwal, D. S., Gleason, C. A. and Mills, L. F. (2004) 'Last-Chance Earnings Management: Using the Tax Expense to Meet Analysts' Forecasts*', *Contemporary Accounting Research,* 21(2), pp. 431-459.

Dhaliwal, D. S., Lamoreaux, P. T., Lennox, C. S. and Mauler, L. M. (2015) 'Management Influence on Auditor Selection and Subsequent Impairments of Auditor Independence during the Post-SOX Period', *Contemporary Accounting Research,* 32(2), pp. 575-607.

Doidge, C., Karolyi, G. A., Lins, K. V., Miller, D. P. and Stulz, R. M. (2009) 'Private Benefits of Control, Ownership, and the Cross-listing Decision', *The Journal of Finance,* 64(1), pp. 425-466.

Durnev, A. R. T. and Kim, E. H. (2005) 'To Steal or Not to Steal: Firm Attributes, Legal Environment, and Valuation', *The Journal of Finance,* 60(3), pp. 1461-1493.

Eshleman, J. D. and Guo, P. (2014) 'Do Big 4 Auditors Provide Higher Audit Quality after Controlling for the Endogenous Choice of Auditor?', *Auditing: A Journal of Practice & Theory,* 33(4), pp. 197-219.

Faccio, M., Masulis, R. W. and McConnell, J. J. (2006) 'Political Connections and Corporate Bailouts', *The Journal of Finance,* 61(6), pp. 2597-2635.

Fama, E. F. and Jensen, M. C. (1983a) 'Agency Problems and Residual Claims', *The Journal of Law and Economics,* 26(2), pp. 327-349.

Fama, E. F. and Jensen, M. C. (1983b) 'Separation of Ownership and Control', *The Journal of Law and Economics,* 26(2), pp. 301-325.

Fan, J. P. H., Rui, O. M. and Zhao, M. (2008) 'Public governance and corporate finance: Evidence from corruption cases', *Journal of Comparative Economics,* 36(3), pp. 343-364.

Fan, J. P. H. and Wong, T. J. (2002) 'Corporate ownership structure and the informativeness of accounting earnings in East Asia', *Journal of Accounting and Economics,* 33(3), pp. 401-425.

Fan, J. P. H. and Wong, T. J. (2005) 'Do External Auditors Perform a Corporate Governance Role in Emerging Markets? Evidence from East Asia', *Journal of Accounting Research,* 43(1), pp. 35-72.

Fan, J. P. H., Wong, T. J. and Zhang, T. (2007) 'Politically connected CEOs, corporate governance, and Post-IPO performance of China's newly partially privatized firms', *Journal of Financial Economics,* 84(2), pp. 330-357.

Felix, J. W. L., Gramling, A. A. and Maletta, M. j. (2001) 'The Contribution of Internal Audit as a Determinant of External Audit Fees and Factors Influencing This Contribution', *Journal of Accounting Research,* 39(3), pp. 513-534.

Financial Reporting Council (2016) *The UK corporate governance code*.

Fiolleau, K., Hoang, K., Jamal, K. and Sunder, S. (2013) 'How Do Regulatory Reforms to Enhance Auditor Independence Work in Practice?', *Contemporary Accounting Research,* 30(3), pp. 864-890.

Gillan, S. L. and Starks, L. T. (2007) 'The Evolution of Shareholder Activism in the United States', *Journal of Applied Corporate Finance,* 19(1), pp. 55-73.

Goh, B. W. (2009) 'Audit Committees, Boards of Directors, and Remediation of Material Weaknesses in Internal Control*', *Contemporary Accounting Research,* 26(2), pp. 549-579.

Graham, J. R., Harvey, C. R. and Rajgopal, S. (2005) 'The economic implications of corporate financial reporting', *Journal of Accounting and Economics,* 40(1), pp. 3-73.

Greenwood, R. and Schor, M. (2009) 'Investor activism and takeovers', *Journal of Financial Economics,* 92(3), pp. 362-375.

Greiner, A., Kohlbeck, M. J. and Smith, T. J. (2017) 'The Relationship between Aggressive Real Earnings Management and Current and Future Audit Fees', *Auditing: A Journal of Practice & Theory,* 36(1), pp. 85-107.

Grossman, S. J. and Hart, O. D. (1980) 'Takeover Bids, The Free-Rider Problem, and the Theory of the Corporation', *The Bell Journal of Economics,* 11(1), pp. 42-64.

Gul, F. A., Kim, J.-B. and Qiu, A. A. (2010) 'Ownership concentration, foreign shareholding, audit quality, and stock price synchronicity: Evidence from China', *Journal of Financial Economics,* 95(3), pp. 425-442.

Gunny, K. A. 2005. What are the consequences of real earnings management? : Working Paper, University of Colorado.

Gunny, K. A. (2010) 'The Relation Between Earnings Management Using Real Activities Manipulation and Future Performance: Evidence from Meeting Earnings Benchmarks*', *Contemporary Accounting Research,* 27(3), pp. 855-888.

Hart, O. (1995) *Firms, contracts, and financial structure.* Clarendon Press.

Hay, D. C., Knechel, W. R. and Wong, N. (2006) 'Audit Fees: A Meta-analysis of the Effect of Supply and Demand Attributes*', *Contemporary Accounting Research,* 23(1), pp. 141-191.

Healy, P. M. (1985) 'The effect of bonus schemes on accounting decisions', *Journal of Accounting and Economics,* 7(1), pp. 85-107.

HKEx, H. K. E. a. C. L. (2013) *Introduction to Regulatory Framework*. Available at: http://www.hkex.com.hk/eng/rulesreg/regintro/introreg.htm (Accessed: Oct 10 2014).

Hong, H. A., Kim, J. B. and Welker, M. (2017) 'Divergence of Cash Flow and Voting Rights, Opacity, and Stock Price Crash Risk: International Evidence', *Journal of Accounting Research,* 55(5), pp. 1167-1212.

Hou, Q., Jin, Q., Yang, R., Yuan, H. and Zhang, G. (2015) 'Performance Commitments of Controlling Shareholders and Earnings Management', *Contemporary Accounting Research,* 32(3), pp. 1099-1127.

Houston, R. W., Peters, M. F. and Pratt, J. H. (1999) 'The Audit Risk Model, Business Risk and Audit-Planning Decisions', (no. 3), pp. 281.

Houston, R. W., Peters, M. F. and Pratt, J. H. (2005) 'Nonlitigation Risk and Pricing Audit Services', *Auditing: A Journal of Practice & Theory,* 24(1), pp. 37-53.

Hu, H. T. C. and Black, B. (2006) 'Empty Voting and Hidden (Morphable) Ownership: Taxonomy, Implications, and Reforms', *The Business Lawyer,* 61(3), pp. 1011-1070.

Hung, M., Wong, T. J. and Zhang, F. (2015) 'The Value of Political Ties Versus Market Credibility: Evidence from Corporate Scandals in China', *Contemporary Accounting Research,* 32(4), pp. 1641-1675.

Jensen, M. C. and Meckling, W. H. (1976) 'Theory of the firm: Managerial behavior, agency costs and ownership structure', *Journal of Financial Economics,* 3(4), pp. 305-360.

Jones, J. J. (1991) 'Earnings Management During Import Relief Investigations', *Journal of Accounting Research,* 29(2), pp. 193-228.

Kachelmeier, S. J., Rasmussen, S. J. and Schmidt, J. J. (2016) 'When Do Ineffective Audit Committee Members Experience Turnover?', *Contemporary Accounting Research,* 33(1), pp. 228-260.

Kahan, M. and Rock, E. B. (2007) 'HEDGE FUNDS IN CORPORATE GOVERNANCE AND CORPORATE CONTROL', *University of Pennsylvania Law Review,* 155(5), pp. 1021-1093.

Karla M. Johnstone, a. and Jean C. Bedard, a. (2001) 'Engagement Planning, Bid Pricing, and Client Response in the Market for Initial Attest Engagements', *The Accounting Review,* (2), pp. 199.

Katelouzou, D. 2012. Myths and Realities of Hedge Fund Activism: Some Empirical Evidence [article].

Kinney, W. R., Palmrose, Z. V. and Scholz, S. (2004) 'Auditor Independence, Non-Audit Services, and Restatements: Was the U.S. Government Right?*', *Journal of Accounting Research,* 42(3), pp. 561-588.

Klapper, L. F. and Love, I. (2004) 'Corporate governance, investor protection, and performance in emerging markets', *Journal of Corporate Finance,* 10(5), pp. 703-728.

Klein, A. and Zur, E. (2009) 'Entrepreneurial Shareholder Activism: Hedge Funds and Other Private Investors', *Journal of Finance,* 64(1), pp. 187-229.

Klein, A. and Zur, E. (2011) 'The impact of hedge fund activism on the target firm's existing bondholders', *Review of Financial Studies*, pp. hhr016.

Kosnik, R. D. (1987) 'Greenmail: A Study of Board Performance in Corporate Governance', *Administrative Science Quarterly,* 32(2), pp. 163-185.

Kothari, S. P., Leone, A. J. and Wasley, C. E. (2005) 'Performance matched discretionary accrual measures', *Journal of Accounting and Economics,* 39(1), pp. 163-197.

Krishnan, J. (2005) 'Audit committee quality and internal control: An empirical analysis', *The accounting review,* 80(2), pp. 649-675.

Krishnan, J. and Krishnan, J. (1997) 'Litigation Risk and Auditor Resignations', *The Accounting Review,* 72(4), pp. 539-560.

Kuo, J.-M., Ning, L. and Song, X. (2014) 'The Real and Accrual-based Earnings Management Behaviors: Evidence from the Split Share Structure Reform in China', *The International Journal of Accounting,* 49(1), pp. 101-136.

La Porta, R., Lopez-De-Silanes, F. and Shleifer, A. (1999) 'Corporate Ownership Around the World', *The Journal of Finance,* 54(2), pp. 471-517.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (2000) 'Investor protection and corporate governance', *Journal of Financial Economics,* 58(1–2), pp. 3-27.

Lasfer, M. (2002) 'Board structure and agency costs'.

Lau, S. T., Shrestha, K. and Yu, J. (2016) 'Corporate Governance and the Information Content of Earnings Announcements: A Cross-Country Analysis', *Contemporary Accounting Research,* 33(3), pp. 1238-1266.

Lawrence, A., Minutti-Meza, M. and Zhang, P. (2011) 'Can Big 4 versus Non-Big 4 Differences in Audit-Quality Proxies Be Attributed to Client Characteristics?', *The Accounting Review,* 86(1), pp. 259-286.

Lawson, B. P. and Wang, D. (2016) 'The Earnings Quality Information Content of Dividend Policies and Audit Pricing', *Contemporary Accounting Research,* 33(4), pp. 1685-1719.

Lechner, M. (2011) 'The Estimation of Causal Effects by Difference-in-Difference Methods', *Foundations and Trends® in Econometrics,* 4(3), pp. 165-224.

Lin, L.-W. (2013) 'State ownership and corporate governance in China: an executive career approach', *Colum. Bus. L. Rev.*, pp. 743.

Liu, Q. and Tian, G. (2012) 'Controlling shareholder, expropriations and firm's leverage decision: Evidence from Chinese Non-tradable share reform', *Journal of Corporate Finance,* 18(4), pp. 782-803.

Marquardt, C. A. and Wiedman, C. I. (2004) 'How Are Earnings Managed? An Examination of Specific Accruals*', *Contemporary Accounting Research,* 21(2), pp. 461-491.

Masulis, R. W., Wang, C. and Xie, F. E. I. (2009) 'Agency Problems at Dual-Class Companies', *The Journal of Finance,* 64(4), pp. 1697-1727.

Mayhew, B. W. and Wilkins, M. S. (2003) 'Audit Firm Industry Specialization as a Differentiation Strategy: Evidence from Fees Charged to Firms Going Public', *AUDITING: A Journal of Practice & Theory,* 22(2), pp. 33-52.

Morck, R., Yeung, B. and Yu, W. (2000) 'The information content of stock markets: why do emerging markets have synchronous stock price movements?', *Journal of Financial Economics,* 58(1–2), pp. 215-260.

Naughton, B. (2007) *The Chinese economy: Transitions and growth.*

Niemi, L. (2005) 'Audit effort and fees under concentrated client ownership: Evidence from four international audit firms', *The International Journal of Accounting,* 40(4), pp. 303-323.

O'Sullivan, N. (2000) 'THE IMPACT OF BOARD COMPOSITION AND OWNERSHIP ON AUDIT QUALITY: EVIDENCE FROM LARGE UK COMPANIES', *The British Accounting Review,* 32(4), pp. 397-414.

Pakaluk, J. (2013) *Auditor Ratification: Shareholders Appear Content*: AuditAnalytics. Available at: http://www.auditanalytics.com/blog/auditor-ratification-shareholders-appear-content/ (Accessed: March 30 2017).

Pérez-González, F. (2006) 'Inherited Control and Firm Performance', *The American Economic Review,* 96(5), pp. 1559-1588.

Pratt, J. and Stice, J. D. (1994) 'The Effects of Client Characteristics on Auditor Litigation Risk Judgments, Required Audit Evidence, and Recommended Audit Fees', *The Accounting Review,* 69(4), pp. 639-656.

Author (2010) *8: AUDITING STANDARDS RELATED TO THE AUDITOR'S ASSESSMENT OF AND RESPONSE TO RISK AND RELATED AMENDMENTS TO PCAOB STANDARDS* Washington, D.C.: PCAOB. Available at: https://pcaobus.org/Standards/Auditing/Pages/AS1101.aspx.

Rosenbaum, P. R. and Rubin, D. B. (1983) 'The central role of the propensity score in observational studies for causal effects', *Biometrika,* 70(1), pp. 41-55.

Rosenbaum, P. R. and Rubin, D. B. (1984) 'Reducing Bias in Observational Studies Using Subclassification on the Propensity Score', *Journal of the American Statistical Association,* 79(387), pp. 516-524.

Roychowdhury, S. (2006) 'Earnings management through real activities manipulation', *Journal of Accounting and Economics,* 42(3), pp. 335-370.

Schipper, K. (1989) 'COMMENTARY on Earnings Management', *Accounting Horizons,* 3(4), pp. 91-102.

Schneider, A. (1985) 'The Reliance of External Auditors on the Internal Audit Function', *Journal of Accounting Research,* 23(2), pp. 911-919.

Schrand, C. M. and Wong, M. H. F. (2003) 'Earnings Management Using the Valuation Allowance for Deferred Tax Assets under SFAS No. 109*', *Contemporary Accounting Research,* 20(3), pp. 579-611.

Seetharaman, A., Gul, F. A. and Lynn, S. G. (2002) 'Litigation risk and audit fees: evidence from UK firms cross-listed on US markets', *Journal of Accounting and Economics,* 33, pp. 91-115.

Shleifer, A. and Vishny, R. W. (1986) 'Large Shareholders and Corporate Control', *Journal of Political Economy,* 94(3), pp. 461-488.

Shleifer, A. and Vishny, R. W. (1997) 'A Survey of Corporate Governance', *Journal of Finance,* 52(2), pp. 737-783.

Simunic, D. A. (1980) 'The Pricing of Audit Services: Theory and Evidence', *Journal of Accounting Research,* 18(1), pp. 161-190.

Simunic, D. A. and Stein, M. T. (1996) 'The Impact of Litigation Risk on Audit Pricing: A Review of the Economics and the Evidence', *Auditing: A Journal of Practice & Theory,* 15(2), pp. 119-134.

Stice, J. D. (1991) 'Using Financial and Market Information to Identify Pre-Engagement Factors Associated with Lawsuits against Auditors', *The Accounting Review,* 66(3), pp. 516-533.

Streiner, D. L. and Norman, G. R. (2012) 'The Pros and Cons of Propensity Scores', *Chest,* 142(6), pp. 1380-1382.

Sudarsanam, S. and Broadhurst, T. (2012) 'Corporate governance convergence in Germany through shareholder activism: Impact of the Deutsche Boerse bid for London Stock Exchange', *Journal of Management & Governance,* 16(2), pp. 235-268.

Thomas, F. G. and L.F., S. L. (1999) 'Fuzzy logic: application for audit risk and uncertainty', *Managerial Auditing Journal,* 14(3), pp. 127-137.

Tsagas, G. (2014) 'A Long-Term Vision for UK Firms? Revisiting the Target Director's Advisory Role Since the Takeover of Cadbury'S PLC', *Journal of Corporate Law Studies,* 14(1), pp. 241-275.

Wang, L. (2015) 'Protection or expropriation: Politically connected independent directors in China', *Journal of Banking & Finance,* 55, pp. 92-106.

Wang, Q., Wong, T. J. and Xia, L. (2008) 'State ownership, the institutional environment, and auditor choice: Evidence from China', *Journal of Accounting and Economics,* 46(1), pp. 112-134.

Watchtell, L., Rosen & Katz March 7, 2011 2011. *RE: Petition for Rulemaking Under Section 13 of the Securities Exchange Act of 1934.* Type to SEC, U.

WFE, W. F. o. E. (2010) 'MARKET CAPITALIZATION', (Accessed 12 Oct 2014).

Wongsunwai, W. (2013) 'The Effect of External Monitoring on Accrual-Based and Real Earnings Management: Evidence from Venture-Backed Initial Public Offerings*', *Contemporary Accounting Research,* 30(1), pp. 296-324.

Xiao, G. (2015) 'Trading and earnings management: Evidence from China's non-tradable share reform', *Journal of Corporate Finance,* 31, pp. 67-90.

Xie, F., Chi, J. and Liao, J. (2016) 'From share issue privatisation to non-tradable share reform: a review of privatisation in China', *Asian-Pacific Economic Literature,* 30(2), pp. 90-104.

Zang, A. Y. (2012) 'Evidence on the Trade-Off between Real Activities Manipulation and Accrual-Based Earnings Management', *The Accounting Review,* 87(2), pp. 675-703.

Zerni, M., Kallunki, J. P. and Nilsson, H. (2010) 'The Entrenchment Problem, Corporate Governance Mechanisms, and Firm Value*', *Contemporary Accounting Research,* 27(4), pp. 1169-1206.

Zhang, Y., Zhou, J. and Zhou, N. (2007) 'Audit committee quality, auditor independence, and internal control weaknesses', *Journal of Accounting and Public Policy,* 26(3), pp. 300-327.