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The determinants of dividend policy in Chinese Listed Firms the role of supervisory boards, investor sentiment and stock liquidity

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The Determinants of Dividend Policy in Chinese Listed Firms: The Role of Supervisory Boards, Investor Sentiment and Stock Liquidity

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ABSTRACT

This thesis investigates a number of inter-related issues pertaining to the relationship between corporate governance and dividend policy in China, including how the two-tier supervisory board and corporate ownership structures influence the likelihood of dividend payouts by listed firms in the Chinese stock market, whilst taking account of the influence of state-controlled and concentrated (or controlling) shareholders. A central aim of the thesis is to examine the influence of a combination of corporate governance and stock market factors, including investor sentiment and stock liquidity, in an attempt to uncover any mediating influences in the impact of two-tier supervisory board and corporate ownership structures on the propensity of the Chinese listed firms to pay cash dividends.

The estimation methodologies employed are logit/probit, tobit and OLS regressions to examine the influence of the above factors on the propensity to pay dividends, on the level of dividend payments, and on changes in dividend payments, respectively, based on a sample of data for Chinese listed firms covering the period 2008-2016. The main results show that, first, the two-tier supervisory board structure has limited influence on dividend policy, except where the interests of controlling shareholders are involved; second, investor sentiment increases the incentives of state-controlled companies, but inhibits the incentives of controlling shareholders, to pay dividends; lastly, as China's stock market operates under an opaque information environment with weak disclosure requirements, stock liquidity is found to have little impact on the ability of state-controlled and majority shareholders to influence dividend policy.

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Chapter 1

INTRODUCTION

1.1 Introduction

Dividend policy has had a long history of development. It refers to the ways in which firms return capital to their equity investors and involves many corporate issues (Lease et al. 1999). In corporate finance, managers must concentrate not only on firms' investment decisions but also on how to maximise the wealth of shareholders. The study of dividend policy attempts to solve issues pertaining to dividends and to formulate dividend theories explaining corporate dividend behaviour. There are various determinants of dividend policy, such as corporate governance, ownership structure, firm characteristics, and stock market reaction (Denis & Osobov 2008; Baker & Powell 2000 Gill, Biger & Tibrewala 2010; Mehta 2012). Broadly defined, corporate governance concerns both the running of external and internal governance mechanisms to maximise firm value and to satisfy the mutual benefit not only of shareholders but also other potential stakeholders (Freeman & Reed 1983; Cadbury 1999; West 2006; Mallin 2009). The models of corporate governance contain one-tier and two-tier systems, which differ in terms of board size, compensation, and shareholder versus stakeholder interests. Hence, corporate governance is one of the important determinants of dividend policy decisions. The ownership structure is also a significant determinant of dividend policy. Companies are owned by different types of investors, who also contribute to accomplishing firms' financial objectives. Moreover, the distribution of

stock among shareholders has a significant impact on corporate actions that are dependent on shareholder voting. Majority control gives larger shareholders considerable power and discretion over key decisions, such as dividend decisions and payout ratios (Gugler 2003). Therefore, how different types of ownership impact dividend decisions according to their demands has long been an area of discussion.

It should be noted that, in addition to the above factors, there might be other influences of corporate board structure and stock market environment (such as investor confidence, shareholder rights protection, default risk, board diversity, information asymmetry, etc.) which could influence corporate dividend policy. However, it has to be borne in mind that some factors (e.g. investor confidence) are hard to measure accurately, while others (e.g. information asymmetry) are included as relevant control variables, but they are not the main focus of interest in this research. Moreover, other factors, for example, shareholder rights protection and board diversity, have been examined in markets where the rule of law and the transparency of the corporate environment are strong (e.g. the US or European stock markets). Given the opaque nature of the Chinese system, these considerations may be important in other respects, but, in this context of dividend policy, they are less relevant and this study considers investor sentiment and stock liquidity, along with the influence of corporate board structure, as more relevant.

Combining the above factors, this thesis investigates the relationship between corporate governance and dividend policy, including how corporate structure, specifically the supervisory board and corporate ownership, with reference to

concentrated and state-controlled shareholders, influence dividend policy on the Chinese stock market. Moreover, corporate governance is combined with stock market factors, namely investor sentiment and stock liquidity, to further discover how the impacts of board structure and ownership are enhanced or weakened according to the reaction and variation in the stock market. The research develops based on the Chinese stock market, first, because Chinese-listed firms are required to run a two-tier system, which contains both the board of directors and the supervisory board. Second, controlling and state shareholders are pervasive in the case of Chinese-listed firms (Bae, Kang, & Kim 2002; Lee & Xiao 2004; Chang & Shin 2007). As a result, the Chinese market provides a suitable setting with appropriate availability of data for pursuing this research.

Following an overview of the literature on the dividend policy of firms (Chapter 2) and the discussion on the methodology for testing relevant hypotheses (Chapter 3), three empirical chapters form the bulk of this thesis. The underlying motivation for investigating these issues including the contributions are explained in the remainder of the chapter. The first empirical chapter (Chapter 4) investigates the effects of the supervisory board on dividend policy decisions, including the propensity for, the level of and the change in cash dividend based on a sample of Chinese-listed firms. As Chinese supervisory boards are based on, but different from, German supervisory boards, this fact could influence different aspects of dividend payout policy, an issue that warrants further investigation for reasons explained below. The results show how Chinese supervisory boards affect cash dividends. The second empirical chapter

(Chapter 5) investigates the relationship between investor sentiment, corporate ownership, with reference to concentrated and state-controlled shareholders, and dividend policy, including decisions on and changes to cash dividends based on a sample of Chinese-listed firms. Following previous research, we built on logit and OLS models to investigate how concentrated ownership and the state ownership influence dividend policy based on investor sentiment affects the likelihood of dividend policy. The third empirical chapter investigates the relationship between stock liquidity, corporate ownership, with reference to concentrated and state-controlled shareholders, and dividend policy, including the decisions on and changes to cash dividends, based on a sample of Chinese-listed firms. Ass with the previous chapter, logit and OLS models are built to examine how specific ownership, concentrated or state, influences dividend policy based on stock liquidity.

1.2 Research Motivation, Objectives and Key Findings

1.2.1 Supervisory Boards and Dividend Policy

The investigation of the effects of the supervisory board on dividend policy decisions, including the propensity for, the level of and the change in cash dividends is based on a sample of Chinese-listed firms. Following previous research, we build upon logit and OLS models to examine how the features of the Chinese supervisory board, including its size (Guest 2009; Böckli 2009; Hommelhoff & Hopt 2009; Lublin 2014); acceptance of emoluments (Bertrand & Mullainathan 2001; Bebchuk & Fried 2003); employee representation (Faccio, Lang, & Yong 2001; La Porta et al. 2002); shareholding ratio

(Weisbenner 2000; Fenn & Liang 2001; Kahle 2002); and dependent director representatives, which refers to the supervisors who have a close working relationship with the board of directors, such as the chairman, secretary and the chairman's assistant (Grinstein & Tolkowsky 2004; Adams & Feirrera 2007), will influence cash dividend payments.

There are three reasons to study the Chinese supervisory board. First, the authority and status of the Chinese supervisory board are weak. The Chinese board is less independent and mostly powerless to influence dividend policy. Second, the members of the Chinese supervisory board, such as the employee representatives, lack support and protection from relevant organisations. Finally, the business operations in Chinese companies are more complex and the specificities of Chinese ownership, such as the SOEs, could influence the function of the supervisory board in some way. Although previous research has studied how the Chinese supervisory board impacts dividend policy from aspects such as board size and the background and shareholding ratio of the members, the evidence in this respect is mixed; moreover, some aspects of research on dividend policy, such as the effect of emolument incentives and supervisory board independence, have been underexplored. As a result, the Chinese supervisory board may influence dividend payout policy in different and unknown ways, thereby warranting further investigation.

The results of this empirical chapter first show how the aspects of the Chinese supervisory board impacts cash dividends, and second, what board problems need to

be improved and solved. The detailed results are presented, and the main findings are concluded in the empirical Chapter 4.

1.2.2 Investor Sentiment, Ownership Structure and Dividend Policy

Investigation of the relationship between investor sentiment, corporate ownership, and dividend policy is pursued in the second empirical chapter (Chapter 5) with reference to concentrated and state-controlled shareholders, covering policy decisions based on, and changes to, cash dividends, using a sample of Chinese-listed firms. Following previous research, we estimate logit and OLS models to investigate how concentrated and the state ownership influence dividend policy based on investor sentiment. Previous research suggests that dividend policy is solely determined by investor sentiment (Baker & Wurgler 2004; Li & Lie 2006). This research aims to examine the effects of investor sentiment on the propensity of the controlling and state-controlled shareholders to pay cash dividends.

Previous research explores the relationship between either investor sentiment (Frankfurter & Wood 2002; Baker & Wurgler 2004; Ferris, Sen, & Yui 2006) or ownership of the company (Berkman, Cole, & Fu 2009; Jiang, Lee, & Yue 2010; Peng, Wei, & Yang 2011) and dividend policy. According to agency theory, the controlling inside shareholders could expropriate not only minority shareholders but also outside ones by manipulating dividend policy (Berkman, Cole, & Fu 2009; Jiang, Lee, & Yue 2010; Peng, Wei, & Yang 2011). However, they still need to be concerned with investors' requirements and firm value (Truong & Heaney 2007). In addition, investor

sentiment reflects investors' demands, as well as influencing dividend payment. As a result, an important research question is whether and how investor sentiment influences the incentives of majority shareholders' with regard to cash dividend payments. This study aims to research this topic. Moreover, we focus on Chinese-listed firms with highly concentrated state-controlled ownership, meaning that many Chinese listed firms' share distributions are not only highly concentrated but also state-owned. Hence, we also test whether investor sentiment influences SOEs' decisions on cash dividends.

In this research, we use principal component analysis (PCA) to build an investor sentiment index and define it as the first principal component of the correlation matrix of five variables, namely share turnover, IPO number, first-day returns on IPOs, the equity share ratio, and dividend premium, following Baker & Wurgler (2007), Zhu & Niu (2016), Ding et al. (2017). The results of this empirical analysis show the relationship between investor sentiment and cash dividend payment as well as how investor sentiment influences the propensity of state-controlled and majority shareholders to pay cash dividends. The detailed analysis and the main conclusion are discussed in the empirical Chapter 5.

1.2.3 Stock Liquidity, Ownership Structure and Dividend Policy

The third empirical chapter (Chapter 6) investigates the relationship between stock liquidity, corporate ownership, with reference to concentrated and state-controlled shareholders, and dividend policy, including the decisions on and changes to cash dividends, based on a sample of Chinese-listed firms. Following previous research, we

utilise logit and OLS models to investigate how concentrated and the state ownership influence dividend policy based on the level of stock liquidity. Previous research explores the relationship between either stock liquidity (La Porta et al. 2002; Li & Zhao 2008; Petrasek 2012) or ownership of the company (Berkman, Cole, & Fu 2009; Jiang, Lee, & Yue 2010; Peng, Wei, & Yang 2011) and dividend policy. Consequently, the gap related to how specific ownership, concentrated or state, influences dividend policy based on stock liquidity is covered in this research.

The results and conclusions of this chapter indicate that stock liquidity in fact has no significant impact on cash dividend payment or the propensity of state-controlled or majority shareholders to pay dividends in the Chinese stock market. In other words, Chinese companies with concentrated state-controlled shareholders are not sensitive to stock liquidity. The details are described in the empirical Chapter 6.

1.3 Contributions of the Research

1.3.1 Contributions to Literature

First, this thesis extends and complements the extant literature on supervisory boards and dividend policy. Previous research has studied how the German and Chinese supervisory boards impact dividend policy from aspects such as board size and the background and shareholding ratio of the members (Agrawal & Knoeber 2001; Faccio, Lang, & Young 2001; La Porta et al. 2002; Fich 2005; Böckli 2009; Hommelhoff & Hopt 2009; Block & Gerstner, 2016). However, some aspects of supervisory characteristics, such as emolument incentive and supervisory board independence,

especially in the Chinese stock market, have not been explored. As a result, in this research, we examine how features of the Chinese supervisory board, including size (Guest 2009; Böckli 2009; Hommelhoff & Hopt 2009; Lublin 2014); receipt of emoluments (Bertrand & Mullainathan 2001; Bebchuk & Fried 2003); employee representatives (Faccio, Lang, & Young 2001; La Porta et al. 2002); shareholding ratio (Weisbenner 2000; Fenn & Liang 2001; Kahle 2002); and dependent director representatives (Grinstein & Tolkowsky 2004; Adams & Feirrera 2007), influence cash dividend payments.

The second contribution of this thesis is to extend and complement the extant literature on investor sentiment and dividend policy from a different perspective. contrary to the findings of previous research, there is a significant negative relationship between investor sentiment and cash dividend payment in the Chinese market, which is not consistent with catering theory, but instead supports signalling theory. The research result suggests that companies will tend to pay cash dividends to deliver positive signalling and to attract investors when the investor sentiment is low, which means investors have no confidence or expectations of the stock market (Bhattacharya, 1979; Miller & Rock, 1985). The empirical analysis also provides literature evidence of the effects of investor sentiment on the propensity of the controlling and statecontrolled shareholders to pay cash dividends, an issue which has been little studied in previous research. Investor sentiment influences the inventives of state-controlled and majority shareholers, that help to reduce the agency problems between different types of shareholders (Stein 1997; Shleifer & Vishny 1997; Gugler 2003; Peng

et al. 2011; Bradford, Chen, & Zhu 2013) and protect shareholders right (Mardani & Indrawati 2018).

The final contribution of the thesis is to extend and complement the extant literature on stock liquidity and dividend policy from different viewpoints supported by evidence from the Chinese stock market. Previous research explains the relationship between stock liquidity and dividend policy by different theories such as the clientele transaction cost view (Banerjee, Gatchev, & Spindt 2007), the informational effect (Kyle 1985; Stiglitz 2000; Leuz, Nanda & Wysocki 2003; La Porta et al. 2002) and the lifecycle theory (Banerjee, Gatchev, & Spindt 2007). However, our research results demonstrate that the value of the coefficient of stock liquidity is significantly positive but close to 0, which give a new view that in practice it has little influence on the dividend policy of Chinese firms. We provide an explanation for the findings based on the actual situation, in that, first, China has a stock market with a more opaque information environment (Allen, Qian, & Qian 2005; Jiang et al. 2017), and second, that there is a serious agency problem caused by Chinese concentrated ownership (Gu, Yang, & Yu 2013; Dong et al. 2014; Li et al. 2015).

1.3.2 Contributions to Practice

Our results and conclusions of Chapter 4 also make contributions to practice and show what the Chinese supervisory board problems need to be improved and solved. First, supervisors who are also shareholders could increase agency problems when they are eager to gain cash dividends for personal advantages (Shleifer & Vishny 1986; Allen,

Bernardo, & Welch 2000). Second, employee representatives can not work effectively. Third, the Chinese supervisory board lacks independence. In fact, the so called “twotier system” in China is in effect a one-tier system in nature. As a result, relevant regulations and laws should be formulated and codetermination need to be introduced to support the operation of the Chinese supervisory board (Meissel & Fogel 1975; Baums & Frick 1997; Dilger 2003). Finally, our results of Chpater 6 indicate that the opaque information environment and the serious agency problem caused by Chinese concentrated ownership should be noticed and improved to make a better dividend policy and protect shareholders right (Allen, Qian, & Qian 2005; Gu, Yang, & Yu 2013; Dong et al. 2014; Li et al. 2015; Jiang et al. 2017).

1.4 Organization of the Study

The remainder of this thesis is organized as follows. Chapter 2 presents a review of the related literature, including the theories of dividend policy and corporate governance, and descriptions of corporate ownership, investor sentiment and market liquidity. Chapter 3 discusses the methodology employed in the empirical analysis. Specifically, after a brief discussion of research philosophy and approaches, this chapter presents the data for the empirical analysis and outlines its collection process, discusses the econometric estimation process, and provides the variable descriptions.

The next three chapters present the detailed empirical analysis as discussed above. Chapter 4 investigates the relationship between the supervisory board and dividend policy. Chapter 5 studies the relationship between investor sentiment, ownership and

dividend policy. Chapter 6 focuses on the relationship between market liquidity, ownership and dividend policy. These empirical chapters follow a common framework: first, the hypotheses are proposed; second, the methodology is outlined, and third, the descriptive statistics are presented followed by a discussion of the regression results and robustness tests aimed to corroborate the findings of the main analysis. Finally, Chapter 7 concludes the key findings of the thesis and discusses the implications and scope for further research.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

Dividend policy refers to the ways that firms return capital to their equity investors and involves many corporate issues, such as firms' share price, investment and value (Allen & Michaely 1995; Lease et al. 1999; Gul et al. 2012). Managers use dividend policy as part of overall firms' investment decisions on how to maximise the wealth of shareholders (Baker, Farrelly & Edelman 1985; Adjaoud & Ben-Amar 2010). There are several types of dividend distributions, such as cash dividends, stock dividends, and property dividends. A company could pay earnings to investors in the form of cash or fair market value of assets, or by offering its shareholders the option of tendering shares directly at a fixed price.

The issue of corporate dividends has a long history. In the early stages, it was seen that managers realised the importance of high and stable dividend payments to maximise shareholder wealth (Frankfurter & Wood 1997). As more research developed on the subject, dividends were also seen as an important form of information to be conveyed about a firm's performance. For example, firms convey relevant information, such as their true value, quality and future development, to the market and investors through dividend payments (Bhattacharya 1979; Miller & Rock 1985; Allen, Bernardo, & Welch 2000; Al-Malkawi, Rafferty, & Pillai 2010). At the same time, managers are also expected to balance different conflicts of interest between various types of capital suppliers by paying dividends (e.g., Easterbrook 1984; Jensen 1986; Alli, Khan, &

Ramirez 1993). In summary, the study of dividend policy attempts to solve issues pertaining to why and how dividends are paid and to apply relevant theories to explain corporate dividend behaviour.

There is now extensive literature on both the theoretical and empirical research into dividend policy. Such a policy is bound up with the development of the corporate form. As financial markets have developed, the issue of why firms pay dividends has become a matter of intense academic debate since the irrelevance hypothesis questioned the reasons why firms pay dividends. The literature highlights various management attributes including corporate governance and ownership structures that are pertinent in influencing dividend policy. At the same time, the development of financial markets has brought forth issues of investor sentiment and stock market liquidity that are also found to be relevant in influencing dividend policy. The object of this chapter is to provide a comprehensive review of all the relevant factors appropriate for this research.

The rest of this chapter is organised as follows. Section 2.2 covers various dividend theories while section 2.3 covers corporate governance theories complementing the factors explaining dividend policy. Section 2.4 discusses the practical arrangements (models) of firm-level corporate governance that exist in modern economies, including the two-tier system in China. Section 2.5 discusses different types of ownership structures while Section 2.6 focusses on how corporate ownership concentration influences dividend policy. Section 2.7 concentrates on the characteristics of corporate ownership in China. Section 2.8 discusses issues of investor sentiment with related

evidence on dividend policy while section 2.9 discusses the same on stock market liquidity. Finally, section 2.10 concludes the chapter.

2.2 Dividend Theories

This section discusses dividend theories beginning with the dividend irrelevance hypothesis, together with MM theory, "The bird in the hand" theory, tax effect, clientele effect, signalling theory, agency theory, lifecycle theory, catering theory and tunnelling theory, containing the developments of the theories from both theoretical and empirical points of view.

2.2.1 Miller and Modigliani (MM) Theory

The MM theory, which postulated the dividend irrelevance hypothesis, is one of the early theories based on the neoclassical assumptions. Miller and Modigliani (1961) proposed the irrelevance theory, which relates to a firm's investment policy being fixed in a frictionless market, meaning that the capital market is perfect, without asymmetric information, taxes, nor transaction or agency costs; the price of securities cannot be influenced by investors or firms, and payout policy is irrelevant to firm value. In a frictionless market, investors will hold the same complete information which could influence the stock price and they can make a stock deal without any costs. In addition, the operating cash flow of a firm will be used to pay the dividend and invest in the future. If a firm invests a large amount of cash, this will influence an increase in stock price. Investors can sell stocks for cash if they wish, even though the dividend is

relatively lower; if the firm chooses to pay a higher dividend, investors can buy more stocks to gain further profit. As a result, investors have no preference for either dividend distribution or capital gain. Since they have no interest in dividend payment, only the profitability or rate of return on future investments will influence the firm value, which is why payout policy is irrelevant to firm value.

The MM theory provided the basic foundation for subsequent research into dividend policy. Some researchers provided evidence to support the MM irrelevance hypothesis that neither high-yield nor low-yield payout policy will influence stock prices (Black & Scholes 1974; Hess 1981; Miller & Scholes 1982; Miller 1986; Bernstein 1996). However, other research does not support this approach or even provides direct evidence to challenge the MM theory. Ball et al. (1979) state that its design is hard to prove. Researchers such as Baker, Farrelly, and Edelman (1985), Partington (1985), Siddiqi (1995), Baker and Powell (1999) and Casey and Dickens (2000) all find strong evidence from through research to support the view that payout policy affects stock prices.

In fact, in a real market, payout policy appears to follow systematic patterns. Moreover, changes in payout policy will also influence firm value in predictable ways. There are various factors which could impact dividend policy, such as taxes, agency relationship, and asymmetric information. As a consequence, the MM theory may be argued to be an untenable proposition. DeAngel, DeAngelo, & Stulz (2006) criticised the MM theory from several aspects. They believed that payout policy was not irrelevant, as first, the market cannot be perfect, and second, even in a frictionless

market, if retention with the NPV (Net Present Value) of investment policy fixed is allowed, a firm can reduce its value by paying out less than the full present value of FCF (Free Cash Flow). However, managers will always choose the best payout policy, and in such cases, this policy does indeed matter, and investment policy is no longer the sole determinant of a firm's value.

2.2.2 The "Bird in The Hand" Theory

Another important traditional theory, "the bird in the hand" theory, was developed by Gordon (1959), which is opposed to MM theory, suggesting that dividend payout policy will influence firm value, especially the cost of capital. Investors prefer dividends to the return from future capital gain because they believe that the income from dividends is more certain, while the income from capital gain comes with risks, which will be greater as time goes on. As a result, investors require a higher rate of future returns to cover their risks. Therefore, they prefer cash dividends, while firms have to pay high dividends periodically to keep their high market value. The bird in the hand theory has been studied and proven by various researchers (Lintner 1962; Gordon 1963; Walter 1963). For instance, Fisher (1961) and Gordon (1963) found that a higher dividend influences the lower cost of equity or return on equity.

Gordon's (1959) theory is also based on several assumptions, which are that firms only have equities but no debts, that retaining earning is the only way to finance, and that returns are constant, as well as the cost of capital. As with the MM theory, the

assumptions of the bird in the hand theory are difficult to achieve in a real market. Furthermore, some research argues that the reasoning underlying the theory is fallacious. For example, the MM theory argues that firm risk is determined by the riskiness of operating cash flow, but not by ways to distribute earnings. Researchers such as Friend and Puckett (1964), Bhattacharya (1979), Rozeff (1982) and Jensen, Solberg and Zorn (1992) found a negative relationship between firm risk and dividend payment because increases in the risk of a firm's operation or cash flow could influence dividends, but increasing dividends cannot reduce firm risk. Moreover, other research suggests that investors are disadvantaged by receiving cash dividends, based on the tax effect hypothesis (Litzenberger & Ramaswamy 1979). Baker, Powell, and Veit (2002) also found no support for the bird in the hand explanation for paying dividends by conducting a questionnaire.

2.2.3 Tax Effect

The tax effect, the final early-stage traditional theory, was first proposed by Farrar, Farrar, and Selwyn (1967), who argue that a lower payout policy should be adopted if the tax on dividends is higher than the tax on a capital gain. In the United States and many other countries, the tax on dividends is higher than that on long-term capital gains, and in most cases, capital gains will not be taxed until they are realized. Therefore, investors prefer capital return because they can defer tax payment and ask for a higher required rate of return to gain more interest to cover their costs. As a result, in order to maximise both firms' and investors' interests, a low payout policy should be adopted.

Brennan (1970) built a capital asset pricing model (CAPM) to test the theory. He assumed that the taxes on both capital gains and dividends must be paid in each period and found that the pretax excess return of the security was positively related to its system risk and dividend yield. As the taxes on dividends are assumed to be paid in each period, a lower dividend results in lower taxes. Later research tested the CAPM model to understand the relationship between dividend payments and stock returns. Some research found evidence to support Brennan's (1970) model, while other studies challenged the conclusion of the model. Litzenberger and Ramaswamy (1979) extended Brennan's (1970) model and found a significant positive coefficient on dividend yield using a long-run measure of yield, which supports the model and concludes that firms can increase share prices by reducing dividends. Keim (1985) developed a SharpeLintner CAPM to examine the relationship between dividend yields and stock returns, with the results suggesting a yield-related tax effect. In Litzenberger and Ramaswamy's (1982) re-examination and other researchers' analyses, such as that of Poterba and Summers (1984) and Kalay and Michaely (2000), evidence that strongly supports the tax effect hypothesis is provided.

However, Black and Sholes (1974) also tested Brenna's (1970) model but were unable to find evidence of the tax effect. Furthermore, Hess (1981) and Miller and Scholes (1982) challenged Litzenberger and Ramaswamy's (1982) conclusion. They argued that the information effect is ignored by Litzenberger and Ramaswamy (1982) and that the coefficient of dividend yield is not statistically significant. Morgan and

Thomas (1998) drew on Keim's (1985) methodology and suggested that there was a non-linear relationship between dividend yield and risk-adjusted return, which is contrary to Brennan's model and tax effect theory. Baker et al.'s (2002) questionnaire also provides weak support for the tax effect theory.

2.2.4 Clientele Effect

The clientele effect proposes that in practice specific investors may face different tax treatments, transaction costs, or various other situations and that they are attracted to firms that suit their particular situations. Meanwhile, these different clienteles will be attracted by different company dividend policies. There are different types of clientele effect, such as the tax-induced and transaction cost-induced.

The essence of a tax-induced clientele effect is the fact that the different tax treatments of dividends and capital gains could lead to different choices by investors. For example, ceteris paribus, investors in low tax brackets who rely on regular and steady income prefer high and stable dividends, while some corporate or institutional investors are more interested in high-dividend stocks (Han, Lee, & Suk 1999; Dhaliwal, Erickson, & Trezevant 1999; Short, Zhang, & Keasey 2002). In comparison, investors in high tax brackets would prefer to invest their income in companies to obtain potential capital gains and defer tax obligations (Al-Malkawi, Rafferty, & Pillar 2010).

With regard to the transaction cost-induced clientele effect, dividend policy could influence different clientele to shift their portfolio allocation, resulting in transaction costs. Small investors, such as retirees and income-oriented ones, who rely on dividend

income, may be attracted to stocks paying high and stable dividends, while investors who do not need their share portfolios to satisfy liquidity needs prefer low dividend payouts to avoid transaction costs when they reinvest the proceeds of dividends in the future (Bishop et al. 2000). Besides investors, companies are also affected by transaction costs. When new equity issuing costs are significant for a company, it is more likely to rely on retained earnings rather than external financing (Fazzari, Hubbard, & Petersen, 1988). Meanwhile, to avoid inducing shareholders to modify their portfolios and entail transaction costs, firms should attempt to adopt a stable dividend policy (Scholz 1992).

Many researchers have studied the existence of the dividend clientele effect theory (Bajaj & Vijh 1990; Ang, Blackwell, & Megginson 1991; Denis, Denis, & Sarin, 1994). Pettit (1972) proves that elderly low-income investors rely more on their portfolios to finance their current consumption and avoid transaction costs. Consequently, they tend to invest in high-dividend stocks. Later, Scholz (1992) developed his model and verified that different tax treatments of dividends influence investors' choice of dividend portfolios, which is consistent with the tax-clientele effect. Moreover, Armstrong & Hoffmeister (2012) studied the change in U.S. dividend taxation for qualified public utility stocks and found that this change affected some high dividend-yielding stocks. Dhaliwal, Erickson & Trezevant (1999) found that institutional shareholding changed following dividend initiations and Seida (2001) also provides evidence consistent with this result. Allen, Bernardo, & Welch (2000) found that firms pay dividends to attract more institutions, which pay less tax than individual investors. Relevant research on the

relationship between institutional shareholders and dividend policy has been conducted and the results are consistent with the clientele effect (Grinstein & Tolkowsky 2004; Desai & Jin 2011). Researchers continued to test and prove the dividend tax-clientele effect with different types of shareholders (Korkeamaki, Liljeblom, & Pasternack 2010; Dahlquist, Robertsson & Rydqvist 2014). For example, Korkeamaki, Liljeblom, & Pasternack (2010) proposed that firms altered their dividend policies based on changes in tax incentives for the largest shareholders in Finland. Elton and Gruber (1970) found that there was a positive relationship between stock dividends and the proportional size of ex-dividend price drops. Their explanation was that differential taxes induced a preference for capital gains relative to cash dividends. They also supported the notion that transaction costs are significant to specific investors (Elton, Gruber, & Rentzler 1984).

Furthermore, some researchers have found evidence that excess ex-dividend-day returns are positively correlated with transaction costs and that short-term trading increases for high-yield stocks around ex-dividend days (Karpoff & Walkling 1988, 1990; Michaely & Vila 1996). The tests of ex-dividend-day behaviour have also been extended to different markets, with mixed results (Brown & Walter 1986; Lakonishok & Vermaelen 1983; Booth & Johnston 1984; Hietala, 1990; Kato & Loewenstein 1995; Bartholdy & Brown 1999; Graham & Kumar 2006; Dasilas 2009). More recently, researchers such as Becker, Ivković, & Weisbenner (2011) found that even the demographic and geographical variations of investors could affect dividend policy. However, other researchers have found less evidence to support the clientele effect

(Lewellen et al. 1978; Kalay 1982; Richardson, Sefcik, & Thompson 1986; Brav et al. 2005).

2.2.5 Signalling Theory

As the study of dividend payout policy developed, a variety of modern theories came about. The MM theory was argued to be inadequate because of the existence of asymmetric information between insiders and outsiders. As a result, signalling theory was proposed, which posits that dividends can convey relevant firm information to investors. The information about a company's current and prospects possessed by managers is actually not available to outsiders, and this informational gap may cause undervaluation of the company and its stock price by the market. Consequently, dividends become a useful tool to convey private information because investors see actual cash flows as a way of valuing a firm (Baskin, Baskin, & Miranti Jr. 1999). In addition, dividend announcements can be seen to convey implicit information about future earnings potential. Therefore, unanticipated announcements of dividend changes will influence a change in share prices in the same direction, which means that prices increase when dividends are initiated or increase, and decrease when dividends are not paid or decrease (Ang 1987; Koch & Shenoy 1999).

Dividend-signalling models are used to provide a logical framework for a better understanding of the role of dividends in communicating relevant information to the market. There are two main basic features of all such models. First, managers possess private information about the future earnings prospects of firms and communicate this

information to the market by using dividend payments. Some information may be easy to deliver to investors either through announcements or audited financial statements, but other crucial information may be harder for investors to obtain. However, if too much detail is exposed by firms, this could undermine their competitive advantages. Second, firms have incentives to establish their true market value immediately. If managers withhold favourable information, this cannot be reflected in current market prices, and the wealth of existing shareholders will be transferred to new shareholders by any new share issues or share sales. The more favourable the private information that firms hold, the greater the incentive they have to communicate this information to the market, with the aim to eliminate the underpricing problem.

There are several classical dividend-signalling models, such as those of Bhattacharya (1979), Miller and Rock (1985), John and Williams (1985), John and Nachman (1986), Kumar (1988), and Allen, Bernardo, and Welch (2000). Bhattacharya (1979) proposes that managers should signal private information that concerns the prospects and expected profitability of firms' investment projects, by committing exante to dividend policy. He assumes that outside investors lack information about the profitability of firms and those cash dividends are taxed more than capital gains, concluding that dividend payment is a signal of expected cash flow under these conditions.

However, the Bhattacharya model has been criticized. First, it does not specify how management would commit to a specific dividend policy because dividends do not represent a contractual obligation, and when a cash flow shortfall occurs, firms are not

obliged to resort to costly external financing to pay dividends. Therefore, market participants will not attach any importance to existing dividend payments if they recognize this lack of commitment, which means that the paying of dividends may not successfully play a signalling role. Second, besides dividend payments, share repurchases could also serve as a valid signalling mechanism, which generally has more favourable tax consequences for investors. Bhattacharya (1979) did not explain why firms choose to pay dividends rather than repurchase shares in order to signal information to the market at that moment. Some other research explains later that cash dividends are paid out of permanent cash flows while repurchasing shares is only the way firms utilize to take advantage of potential undervaluation and distribute excess capital temporarily (Jensen 1986; Stephens and Weisbach 1998; Dittmar 2000).

Miller and Rock (1985) assume that dividend policy signals the qualities of firms. There exists asymmetrical information about firms between managers and outside investors. Highly regarded firms will try to signal positive information to attract investors by paying higher dividends. However, low-quality firms will be reluctant to forgo profitable investments in order to mimic the dividend payments of highlyregarded ones. As a result, firms could distinguish themselves by whether they decide to cut investments to pay high dividends. There is also an implication that firms may purposely reduce investments to pay higher dividends. Additionally, Miller and Rock (1985) predict about the announcement effect of dividend payment: there is a positive announcement effect for a high dividend payment and a negative effect for a low

payment. However, this model also does not give an explanation of why firms choose to signal by paying dividends but not by share repurchases.

John and Williams (1985) overcame such criticism. They developed a model in which personal tax represents the cost signalling of a firm's prospects to the market, which can explain why firms pay dividends even when share repurchases could be chosen as an alternative method. In the John and Williams model, shareholders sell shares to meet their liquidity needs. Managers hold information regarding the true value of firms that outside investors do not have and support the interests of existing shareholders. If firms are undervalued and existing shareholders have to sell their shares at a price that is below the fair value, high-quality firms decide to signal their true value by paying a taxable dividend. Although this is costly to shareholders, who must pay tax on the dividends if the outside investors interpret it as a positive signal, the share price will rise and shareholders will be able to sell fewer shares to meet their liquidity needs.

In this case, paying dividends provides two benefits. First, shareholders sell their shares at a higher price. Second, they can benefit sufficiently from their fractional ownership only when their firms are sufficiently undervalued, even though they have to bear the tax cost. This is because a large fractional share of a firm's equity is held by shareholders, and the gain on this part is quite valuable when the firm is undervalued. The shareholders of a low-quality firm will not obtain a profit because they will lose on the fractional share retained when any overvaluation is corrected. John and Williams (1985) model suggests that firms expect optimally high future operating cash flows to

pay higher dividends, and these are higher when the tax cost relative to the capital gain is lower.

As the study of signalling theory developed, researchers found that a firm will not change its dividend payment easily over a substantial period, even though its earnings may change dramatically during the same period. John and Nachman (1986) built their model by adding a dynamic version of the John and Williams (1985) model. In the John and Nachman (1986) model, the equilibrium of dividend payment is decided by two terms: first, the total extent of financing made at the firm and shareholder level; and second, the degree of optimism managers have in their private information. There are two specific situations: one when managers possess a high level of optimism about a firm's future earnings and the firm's securities are mispriced, so only the amount needed to finance profitable investments is expected; and one when the level of optimism about future earnings is relatively low, meaning managers prefer to acquire a large number of funds and hold a part of these in reserve to finance future investments. In both situations, the dividend payments are roughly the same, although the cash flows are quite different.

Subsequently, Kumar (1988) developed a signalling theory in which dividend payments are smoothed relative to underlying cash flows. The Kumar (1988) model shows that with regard to types of firms ranging from low-quality to high-quality, the smoothing arising from dividends can be used to separate between them. Firm quality can be broken down into a finite number of discrete intervals, although firms in the same interval pay the same dividends, even though they have different earnings.

Allen, Bernardo, and Welch (2000) developed a signalling model that potentially explains both dividend payments and smoothing based on tax clienteles. There are two types of investors in their model, untaxed institutional investors and taxed individual ones. In addition, they assume that institutional investors have greater incentives to invest and learn better about the quality of the firm because of their size. As a result, Allen, Bernardo, and Welch (2000) further assume that paying dividends is one way to attract institutional investors. In their model, the market prices of the securities of the dividend-paying firms are more attractive for purchase by institutions than by individual investors because of the relative tax advantage. In addition, taxable dividends only exist in a high-quality firm because dividend payment will increase the chance that institutions which hold the firm's stock detect the quality of the firm. Poor-quality firms know that their real quality will be revealed and they will lose if they mimic this dividend payment, while a high-quality firm does not fear losing investors and is willing to allow shareholders to incur tax costs in order to signal the quality of the firm.

There is a long history of the research into signalling theory. Pettit (1972) is recognised as the first researcher to propose a dividend information market reaction. He found that share prices tend to rise or fall as announcements of dividends increase or decrease, and suggests that dividends can be used as an implicit device to transmit future information of expected earnings because of the limited public information disclosure. Moreover, for the first time, the variations in dividends are connected with additional information delivery, such as long-term cash flow; and the significance of

the information depends on whether or not it is already known by the public. These findings were later supported by Aharony and Swary (1980) and Woolridge (1983).

Ross (1977) introduced asymmetric information theory into the analysis of capital structure and stock dividend policy. Subsequently, Bhattacharya (1979) established the first theoretical model in the area of signalling hypothesis. Aharony and Swary (1980) found that even after controlling for contemporaneous earnings announcements, the relation between dividends and stock prices still holds, which suggests that dividends contain more incremental information about firm values compared to the relevant value information contained in earnings. Similar results were obtained by Asquith and Mullins's (1983) research.

Other researchers found evidence that dividends can transfer signals of different company aspects (Asquith & Mullins Jr. 1983). Some studies established that excess returns change following either the initiation or omission of dividends because of the signals they transfer (Asquith & Mullins Jr. 1983; Michaely, Thaler, & Womack 1995; Allen, Bernardo, & Welch 2000; Bali 2003). Miller and Rock (1985) found that dividends are the residual of earnings over investments and that a higher dividend than expected implies higher firm earnings, which will lead to a positive reaction to the stock price when the dividend announcement is made. Andres et al. (2013) reached the same conclusion, and also found that price reaction to dividends is related to a firm's ownership structure. Kalay and Loewenstein (1985) proposed that the timing of dividend announcements could convey information to investors, while Benartzi, Michaely and Thaler (1997) proved that changes in dividends convey information about

the past and current earnings of firms. Furthermore, Hull (2015) suggests that a firm's dividend reduction timing is relative to other dividend reductions in the same industry. When external financing is less available, high-value firms with greater investment opportunities will be amongst the first to make necessary dividend reductions for investment opportunities.

Other research proposes that the signalling power of dividends differs from market to market. For instance, Dewenter and Warther (1998) compared dividend policies between Japan and the US and found the signalling effect in Japan was significantly lower than in the US. Conroy, Eades, and Harris (2000) also provide evidence consistent with this result. Overall, the mixed support for signalling theory indicates that firms communicate information about current and prospects by their dividend policy.

2.2.6 Agency Theory

A corporation's operations involve a complex structure and rely on the contractual arrangements between different parties. Dividend payment plays an important role in balancing the complicated relationships between these parties. Different conflicts of interest occur between different types of capital suppliers, but the conflicts between stockholders and bondholders, and management and stockholders, dominate in the discussion of payout policy (Easterbrook 1984; Jensen 1986). In the conflicts of interest between bondholders and stockholders, management is assumed to be aligned with stockholders. Bondholders and stockholders share the market value of the firm and

bondholders are paid before stockholders. Both the bondholders and the stockholders are willing to maximise their interests and therefore conflicts of interest between bondholders and stockholders occur, which will be discussed in separate research.

Emphasis will be placed on another main conflict, that between stockholders and managers. Stockholders, who are defined here as the suppliers of capital in all forms, are the owners of the firms; however, in practice, professional managers are in control. The incentives of management and the stockholders are different. Both the social status and benefits of managers are associated with the controlled assets. First, managers always expect to hold more capital and retain as many earnings as they can to gain higher compensation, to prove how successfully they run the companies, and to avoid the risk of financial distress. Second, in many firms, executives are granted stock options, which means managers have incentives to reduce dividend payments to avoid a decline in the exercise prices of the options on ex-dividend days. Third, managers can manipulate investment decisions if they hold a large number of resources, as they prefer to invest more in securities that meet their personal interests better, which will lead to overinvestment.

Therefore, in summary, managers have the incentive to pay a lower amount of dividends, which would maximise the wealth of stockholders and retain resources under their control as much as possible, resulting in overinvestment and undervaluation of the firm's stock. Thus, managers' behaviour would influence the interests of stockholders. Consequently, the board of directors is charged with representing the interests of stockholders and monitoring the performance of management. They want to ensure that

management makes decisions that are consistent with stockholders' greatest wealth. However, this is not easy, because management is more privy than the members of the board to better information concerning the firm. As a result, a conflict of interest between the two groups exists, which will influence dividend decisions.

Easterbrook's (1984) and Jenson's (1986) models are relatively important in agency theory. Easterbrook (1984) conjectured that dividend payments play an important role in solving agency relationships between stockholders and management. Entrepreneurs need a large number of external funds for financial investment as the optimal size of firms grows, which could result in a more diverse group of firm stockholders. However, smaller stockholders are unlikely to monitor the actions of managers because they will incur the full costs of monitoring, but receive only a small part of the benefits. However, if the stockholders can spread the monitoring costs proportionally, they can all gain when management makes an improved decision.

Easterbrook argued that this is how dividend payments work. When a firm wants to raise external funds, it will pay more dividends to attract more investors. This behaviour will attract more professionals such as investment bankers, money managers, and public accountants, to scrutinise and evaluate the firm's management. These professionals must be responsible because they could lose their reputation and customers for future security offerings if they misprice issues. As a result, the management of dividend-paying firms is scrutinised more frequently. Shareholders should have no problems with this because they can achieve better monitoring of management without paying monitoring costs. On one hand, paying dividends can

attract funds; on the other hand, it can disperse and reduce the agency costs of firms, which is why stockholders insist on dividend payment, so they can spend less.

Easterbrook (1984) proposed that managers have great incentives to pay less, while stockholders prefer to receive higher dividends because first, managers wish to hold more earnings to reduce the firms' debt/equity ratio, so they can gain a higher reputation, and second, they will benefit more from future investments. From the summary above, Easterbrook found two important implications from his analysis. First, firms with more decentralised and smaller stockholders pay higher dividends and do so more frequently, as they have to rely on paying dividends to monitor management. Second, firms with lower debt/equity ratios, which also means they retain more earning for investments, pay fewer dividends. Easterbrook's model shows a positive correlation between dividends and the debt/equity ratio.

Conversely, Jensen's (1986) model discovered a negative relationship between dividends and the debt/equity ratio. According to Jensen's analysis, free cash flows, which are defined as cash flow in excess of that to support positive NPV investment projects, play an important role in separating managers' interests from those of stockholders. Stockholders should insist that these free cash flows be paid in case managers use them to invest in their objectives. As a result, the lower the debt/equity ratio, the higher the level of dividends that should be paid.

Agency theory has been studied over a long period. Many researchers have proposed that dividend policy is a way to relieve the agency problems between corporate insiders and outside shareholders (Easterbrook 1984; Jensen 1986; Zwiebel

1996; Fluck 1998; Myers 1998; Gomes 2000). Rozeff (1982), one of the first researchers to model agency costs by the "cost minimization model", points out that there should be a negative relationship between the insiders' shareholding ratio and the payout ratio, with a positive relationship between the dispersion of ownership and payout ratio. He also suggests that the benefit of paying dividends in reducing agency costs is limited for firms with lower dispersive ownership, which supports the agency costs hypothesis. This hypothesis is examined and supported by many other researchers employing various methods in different markets, such as Jensen, Solberg, and Zorn (1992), Holder, Langrehr, and Hexter (1998), Saxena (1999), and Al-Malkawi (2005).

A further study of the agency cost hypothesis, which in particular supports the free cash flow hypothesis of Jensen (1986), was made by Lang and Litzenberger (1989). They distinguish between overinvesting firms and value-maximising ones using Tobin's Q ratio and propose an overinvestment hypothesis that the potential for overinvestment problems may grow when dividend payments are reduced. However, their results were challenged by other empirical studies, which found little support for the agency theory of the free cash flow hypothesis as an explanation of dividend policy (Howe, He, & Kao 1992; Denis, Denis, & Sarin 1994; Yoon & Starks 1995; Lie 2000).

La Porta et al. (2002) developed two competing hypotheses, the outcome, and the substitution hypotheses, to explain the relation between dividend policy and agency theory. The outcome hypothesis implies that dividends are a result of the legal protection of shareholders in a more effective legal protection system because shareholders have a greater right to force managers to release cash. On the other hand,

the substitution hypothesis predicts that in a weak legal protection environment, managers use dividends to establish a good reputation when they need to raise external funds from the capital market. This is consistent with the outcome hypothesis, and also supports the fact that paying dividends can reduce the conflict between insiders and outsiders, or shareholders. In summary, the empirical results for the agency theory of dividend policy are mixed, but prove that dividends serve to reduce conflicts of interest between managers and shareholders, agency costs, and overinvestment problems.

2.2.7 Lifecycle Theory

The lifecycle theory of dividends contends that the optimal dividend policies of firms are dependent on the stages at which firms are in their life cycles. As firms grow to maturity, their investment opportunities and growth rates are reduced, but profitability and free cash flow rise. Therefore, firms begin to pay dividends in order to distribute earnings to shareholders. The theory also predicts that firms will continue to pay dividends, even if their growth opportunities and profitability are expected to decline over the short term, which is contradictory to signalling theory (Grullon, Michaely, & Swaminathan 2002; Bulan & Subramanian 2009).

Extensive research has found evidence for the lifecycle theory. Mueller (1972) focuses on the agency problem between managers and shareholders in his seminal study and proposes that the agency problem is insignificant or even absent in a “young” firm; it will only become a real problem when the firm matures. This is further supported by DeAngelo, DeAngelo, and Stulz (2006), who found strong evidence that a firm

increases dividend payments as the relative amount of earned equity in its capital structure rises. They controlled for several microeconomic factors, such as firm size, profitability, total equity and growth, and their regression shows that there is a high significant relation between payment decisions and the earned/contributed capital mix. Other researchers have also proven that the initiation of and changes to dividends are related to life cycle theory. For example, Benartzi, Michaely, and Thaler (1997) found that dividends decrease when the growth rate increases; Grullon, Michaely, and Swaminathan (2002) also propose that an increase or decline in firm profitability follows an increase or decrease in dividends. Bulan, Subramanian, and Tanlu (2007) also found that the initiation of dividends happens at the mature stage of a firm's life cycle. They discovered that mature firms, which have grown larger, are more profitable and have greater cash flow but fewer growth opportunities, will initiate dividends. Denis and Osobov (2008) further extended the research to several countries and their results continue to support the dividend lifecycle theory.

However, the theory is also controversial among some researchers. For instance, the research of Von Eije and Megginson (2008) indicates that an increase in retained earnings to equity has no likelihood of leading to dividend payout, whereas the age of the company has an influence. Overall, the empirical evidence favours the lifecycle theory of dividends in terms of dividend payment propensity and life cycle characteristics.

2.2.8 Catering Theory

Catering theory was first proposed by Baker and Wurgler (2004). Generally speaking, the theory proposes that: "Managers cater to investors by paying dividends when investors put a stock price premium on payers, and by not paying when investors prefer nonpayers." (Baker & Wurgler 2004: 1126). This means that managers will make a dividend decision according to investor demands for dividend payers. There are three basic premises for the catering theory. First, cash dividends are a source of the uninformed investor demand for firms; second, limits on arbitrage allow this demand to affect current share prices; and third, managers take advantage of the short-run benefits of catering to current mispricing against the long-run costs, and then make payout decisions. The empirical work to prove this theory tests the propensity to pay dividends depending on a dividend premium.

Some research has attempted to prove the dividend catering theory. Baker and Wurgler (2004) found that there was a close correlation between the propensity of firms to pay dividends and the dividend premium, and proved that there was a link between catering incentives and the propensity of firms to pay dividends in another paper (Baker and Wurgler 2004). Li and Lie (2006) developed Baker and Wurgler's (2004) model on catering theory and argued that the dividend catering model should not only estate whether firms pay dividends or not, but also explain the level of dividend change. They found that the dividend premium influences not only the decisions to increase or decrease dividend payments, but also the size of such changes. Ferris, Sen, and Yui (2006) further validated the catering theory, finding dividends had disappeared from the UK market after 1990 because of the very low dividend premium level. Neves and Torre (2006) developed and supported this theory in the European market, while Baker,

Greenwood, and Wurgler (2009) suggested a catering theory of nominal share prices. They proved that managers would prefer to increase the supply of low-priced securities if they are valued higher and are more attractive than high-priced securities in order to cater for investors when they are willing to pay a premium for them, even though there is no increasing practical fundamental value. Albouy, Bah, and Bonnet (2010) explored the theory in another way. They conducted a survey of managers of French-listed companies and obtained a positive response from them, thus supporting the theory. More recent research has examined the theory in different markets, such as Indonesia, Jordan, and Taiwan, and also obtained evidence to support it (Yao, Baker & Powell 2012; Kulchania 2013; Jiang et al. 2013; Ramadan 2015; Wang et al. 2016).

However, some researchers have expressed doubts about the catering theory, for example, Denis and Osobov (2005), Ferris, Jayaraman, and Sabherwal (2009), Tsuji (2010), and Turner, Ye, and Zhan (2013). Denis and Osoboy (2005) and Ferris, Jayaraman, and Sabherwal (2009) suggest that in countries with strict legal requirements, such as Germany, France, and Japan, companies will not pay dividends following investors' preferences. Overall, research into the catering theory continues to merit further exploration.

2.2.9 Tunnelling Theory

The hypothesis of tunnelling also comes from information asymmetry, but contrary to signalling theory, it suggests that dividend payments are used to divert resources from companies to control shareholders' own benefits, but not to deliver information to outsiders or attract investors (Chen, Jian, & Xu 2009; Lin, Chen, & Tsai 2017). Tunnelling is defined as the siphoning of assets and profits out of firms for the benefit

of their controlling shareholders (Johnson et al. 2000; Bae, Kang, & Kim, 2002). Dividend tunnelling explored in the Chinese market suggests three key points. First, in markets with weak legal protection, firms pay dividends to tunnel incentives (Lin & Su 2008; Lin, Chen, & Tsai 2017). Second, the tunneling of dividends is dominant and has become a way to control shareholders and expropriate minority ones (Bae et al. 2002; Lee & Xiao 2004; Chang & Shin, 2007). Particularly for state-owned firms, cash dividend policy is predominantly used to extract resources for their own benefit (Lee & Xiao 2003; Chen, Jian, & Xu 2009). Usually, related-party transactions for tunnelling by group-firms or cash dividends are used as a medium for controlling shareholders to sell non-tradable shares to minority shareholders at a favorable price (Lee & Xiao 2004; Jian & Wong, 2004). For example, many Chinese-listed companies have increased dividend payments because of the differential pricing between tradable and nontradable shares during their initial public offering (IPO). Such companies might use high-dividend payments to divert proceeds from an IPO or rights issue to controlling shareholders' pockets. Third, in the Chinese stock market, controlling shareholders enjoy a disproportionately higher return on dividends compared to outsiders, and take advantage of this feature (Johnson et al. 2000; Chen, Jian, & Xu 2009).

2.3 Corporate Governance Theories

Corporate governance can be defined as either “narrow” or “broad”. This narrow-broad dichotomy is based on a corporate governance regime that focuses on satisfying either the parochial interests of shareholders (Shleifer & Vishny 1997; Sternberg 2004; West

2006) or the broader interests of diverse societal stakeholder groups, such as employees, management, and government (Letza, Sun, & Kirkbride 2004; Gillan 2006). In the narrow sense, shareholders, the board of directors, and executive management are suggested as the key corporate governance structures in order to maximise the wealth of owners (Letza, Sun, & Kirkbride 2004; West 2006). In contrast, a broad definition of corporate governance examines both the running of external and internal governance mechanisms to maximise firm value and satisfy the mutual benefit not only of existing shareholders but also other potential stakeholders (Freeman & Reed 1983; Cadbury 1999; West 2006; Mallin 2008).

Corporate governance practice does not consist of a standard mode and cannot operate in any standard form (Oman 2001). It is concerned with the socio-political and legal environments, business circumstances, and operation strategies, amongst other aspects (Abdullah & Valentine, 2009). Various fundamental theories underlining corporate governance provide interpretations of the influencing factors and help to better understand the issues. An introduction to these theories, including agency, stewardship, stakeholder, resource dependency, transaction cost, social contract, legitimacy, political and ethics-related theory is given below.

2.3.1 Agency Theory

Much research into corporate governance derives from agency theory. In this theory, the agency problem relates to how to induce agents to act in the best interests of the principals (Jensen & Meckling 1976). Agents refer to managers, while the owners and

the board of directors act as the principals. Corporate governance is regarded as a mechanism in which the board of directors is a vital monitoring tool that minimises any principal-agent problems caused by the decentralisation of ownership in modern companies (Mallin 2004). The theory assumes that the interests of the two focused participants in corporations, shareholders and managers, are clear and consistent and that they are not willing to make sacrifices for the interests of others (Daily, Dalton, & Cannella 2003). As a result, although the principals (shareholders) expect the agents (managers) to make decisions in their best interests, the agents may succumb to their self-interest and engage in opportunistic behaviour that may not achieve the aspirations of the principals.

On one hand, the board of directors hired by shareholders plays an agency role to serve the shareholders by approving management decisions and supervising their implementation (Fama & Jensen 1983; Baysinger & Butler 1985; Lorsch & MacIver 1989; Baysinger & Hoskisson 1990; Daily & Dalton 1994). Because the monitoring and governance functions of the board are important, much research has examined the composition of the board (Pearce & Zahra 1992; Barnhart, Marr, & Rosenstein 1994; Daily & Dalton 1994; Gales & Kesner 1994; Bhagat & Black, 1998; Kiel & Nicholson, 2003). On the other hand, as managers may take actions that benefit themselves but not the shareholders by using their specific knowledge and expertise, a monitoring mechanism needs to be built, and a way to induce managers to act in the best interests of the shareholders needs to be provided (Jensen & Meckling 1976; Abdullah & Valentine 2009; Yusoff & Alhaji 2012). The problem between agents and principals

results in agency costs (Shleifer & Vishny, 1997). As a result, the study of governance mechanisms that could protect shareholder interests, minimise agency costs, and align the agents and principals is on-going.

2.3.2 Stewardship Theory

In contrast to agency theory, stewardship theory proposes that managers are good stewards and stand for the best interests of the owners (Donaldson & Davies, 1991). The theory is founded in social psychology, which states that the behaviour of stewards is organizational and collectivist, with a higher utility than individualistic self-service behaviour, and focuses on achieving the interests and goals of organisations (Davis, Schoorman, & Donaldson 1997). As a result, when shareholder wealth is maximised, the function of stewards is also maximised, as they have a clear mission and the success of organisations can satisfy most of the requirements of the owners (Smallman 2004). Smallman also proposes that the stewards will balance the tensions between different beneficiaries. Therefore, stewardship theory proposes an argument about corporate performance that satisfies the requirements of the interested parties and thus achieves the dynamic performance equilibrium for balanced governance. It stresses that there is a strong relationship between managers and firm success because the managers will protect and maximise shareholder wealth by improving firm performance (Davis, Schoorman, & Donaldson 1997; Daily, Dalton, & Canella 2003).

2.3.3 Stakeholder Theory

Stakeholder theory mainly centres on the issues concerning stakeholders in institutions, positing that an entity invariably seeks to balance and satisfy the interests of diverse stakeholders (Abrams, 1951). Stakeholders comprise not only shareholders but also other interest groups such as investors, employees, suppliers and customers, whom all participate in corporate business (Coleman et al. 2008). Consubstantial, contractual and contextual stakeholders are classified in order to distinguish between stakeholder types (Rodriguez, Ricart, & Sanchez 2002). First, consubstantial stakeholders are those who are essential for the existence of corporate business, such as shareholders, strategic partners, investors and employees. Second, contractual stakeholders are ones such as financial institutions, suppliers and customers, who have formal contracts with the company. Finally, contextual stakeholders are representatives of the social and natural systems of business operations and play a fundamental role in gaining credibility and carrying out company activities. Contextual stakeholders could be local communities, public administration or countries. Therefore, companies need to safeguard the interests of all these components, which contribute to creating their general value (Zingales 1998; Rajan & Zingales 1998; Rodriguez, Ricart, & Sanchez 2002).

2.3.4 Resource Dependency Theory

Resource dependency theory focuses on the role of the board of directors in acquiring resources for firms, whereas stakeholder theory concerns the interaction between an organization and its various groups of stakeholders. This theory contends that directors

secure essential resources for companies through their linkages to the external environment, and the appointment of independent directors is a means of gaining resources that are critical to the success of companies (Johnson, Daily, & Ellstrand 1996; Hillman, Canella, & Paetzold 2000). This kind of environmental linkage and interdependency may reduce transaction costs (Williamson 1989). For example, external directors who are able to acquire legal advice can communicate this in either board or private meetings and help to reduce costs.

The requirements of resources lead to the development of network governance or exchange relationships between organisations. In addition, the uneven distribution of resources inside organisations results in interdependence in organisational relationships, which may be intensified by factors such as the importance, relative shortage or concentration of resources (Donaldson & Davis 1991). This resource dependency encourages directors to bring in external resources such as information, skills, key partners and legitimacy to firms in order to overcome uncertainty (Gales & Kesner 1994; Hillman, Cannella Jr., & Paetzols 2000).

2.3.5 Transaction Cost Theory

Transaction cost theory was first developed by Cyert and March (1963) and theoretically described and promulgated later by Williamson (1996), who attempted to show the interdisciplinary alliance of economics, law and organisations. According to this theory, firms are viewed as organisations comprising people with various views and objectives, who become so extensive that they can substitute for the market in

determining resource allocation; in other words, price and production. As a result, managers, who are the decision-makers of corporate transactions, can be opportunists and arrange transactions in their own interests (Williamson 1996; Abdullah & Valentine 2009).

2.3.6 Social Contract Theory

Social contract theory proposes that society is a series of social contracts between members and society itself, and social responsibility is thought of as a contractual obligation that a firm owes to society (Donaldson 1983; Gray, Owen, & Adams 1996). Donaldson and Dunfee (1999) developed the theory that managers make ethical decisions that refer to both a macrosocial contract, which includes the expectations of a business to support the local community and a microsocial contract, which is a specific form of involvement.

2.3.7 Legitimacy Theory

Legitimacy theory assumes that "the actions of an entity are desirable, proper or appropriate with some socially constructed systems of norms, values, beliefs and definitions" (Suchman 1995: 574). It is also based on the notion that a social contract exists between society and its members, similar to social contract theory. The society provides the authority of occupying and utilising natural resources and labour; as a result, a company can receive permission from society to operate and is ultimately accountable for its operations and actions to society (Deegan 2004). In legitimacy

theory, profit is viewed as a comprehensive measure of organisational legitimacy, which means a company must seriously consider the rights of the public, not just the rights of investors (Ramanathan 1976; Yusoff & Alhaji 2012). Profit maximisation is not the primary pursuit of a company. Failing to comply with societal expectations could result in sanctions being imposed in the form of limited company resources, operations and products (Yusoff & Alhaji 2012). Empirical research has used the legitimacy theory to explain the relationship between corporate disclosures and community expectations (Deegan 2004).

2.3.8 Political Theory

Political theory suggests that any political influence existing in companies could direct corporate governance; moreover, the participation of government in corporate decision making helps to gain much public interest when taking cultural challenges into consideration (Pound 1993). This theory highlights that the determination of the allocation of corporate power, profits and privileges is supported by the government. Hawley and Williams (1996) believe there is an immense political influence on governance development. They prove that over the past few decades, the government has had a strong political influence on enterprises and that politics has entered governance structures and corporate mechanisms.

2.3.9 Ethics-Related Theory

Ethics is defined as the study of morality and ethical theories and explains that the rational use of rules and principles can ascertain the rights or wrongs of a situation (Yusoff & Alhaji 2012). Several ethics-related theories are associated with corporate governance, including business, feminist, discourse, virtue and postmodern ethics theories.

Business ethics theory concerns the rights and wrongs of business activities, decisions and situations. The power and influence of business are becoming stronger than ever before, as the business is now a major provider, in terms of products, jobs and services, to society. Any business collapse also has a greater impact on society because the demands of stakeholders in companies are more complex and challenging than previously. Business ethics is important and helps to discover problems and benefits associated with ethical issues in firms. The rights and wrongs of business ethics is understood by injecting morality that is concerned with the norms, beliefs and values fixed in society and is helpful in terms of the rights and wrongs of an individual or community (Crane & Matten 2007).

Feminist ethics theory places more emphasis on more healthy and empathetic social relationships, caring for and avoiding harm to each other. The social concern involves caring for one another, but is not a profit-centred motive in this theory; in addition, it is important to see ethics in the light of the exercised environment, as an organisation is a network of actions and impacts on cross-community levels and interactions (Casey 2006). Discourse ethics theory seeks a peaceful settlement of

conflicts. It is also called argumentation ethics, in that argument that the establishment of ethical truth by way of investigating the presuppositions of discourse helps promote cultural rationality and cultivate openness (Haberman 1996; Meisenbach 2006).

Virtue ethics theory advocates moral excellence, good character, goodness and chastity. It highlights the virtues of developing positive moral behaviour and is committed to bringing intangible virtuous assets into an organisation (Crane & Matten 2007). This theory states that virtue acts in a given situation and involves two aspects, the affective and intellectual. The affective refers to doing the right things with positive feelings, while the intellectual means to behave virtuously for the right reasons (Annas 2003).

Finally, postmodern ethics theory goes beyond moral values and provides a more comprehensive approach, in which companies can make achieving goals a priority and forego or focus minimally on values (Yusoff & Alhaji 2012). Firms that are so valuedriven that their ultimate goals become the pursuit of value may suffer a long-term detrimental effect (Balasubramaniam 1999).

2.4 Models of Corporate Governance

To achieve the aim of corporate governance, different models have been developed based on national and legal origins, including the Anglo-American model and the Continental Europe model. In Anglo-American countries, such as the US and UK, there is a one-tier system, which consists of a unitary board of directors and executive management. The core of this one-tier model is the doctrine of shareholder value and

primacy (Schwartz 1983). The Continental Europe model, which is a two-tier system model, operates in Germany, France, China, Japan and other European or Asian countries, and includes both a board of directors and a supervisory board. The model focuses on maximising the wealth of existing or potential stakeholders, not only the shareholders on the board (Blair 1995). The remainder of this section will give an introduction to and description of the models of corporate governance.

2.4.1 One-tier System

The one-tier board, which is also known as the 'Anglo-American' model, consists only of the board of directors (BoD), which is responsible for both managerial and supervisory duties on behalf of shareholders. This system of corporate governance is practised in the US and UK markets. The members of the board of directors are elected by the shareholders and have the responsibility to advise and oversee management and its decisions. The board structure is a reflection of the neoliberal norms of shareholder primacy, as well as free market capitalism (Block & Gerstner 2016). The neo-liberal norm of shareholder primacy is a traditional unique Anglo-American model, which has been further entrenched by the Anglo-American norms of free-market capitalism and engrained in case law. Many researchers have summarized the notion of shareholder primacy by stating that corporations should develop their business activities with the aim of enhancing corporate and shareholder profit (Smith 1997; Ho 2010).

Normally, the one-tier board is divided between the Chief Executive Officer (CEO) and executive directors, chairman or lead director, and independent directors. The role

of the CEO can be separate from or combined with that of the chairman. Commonly, the CEO or chief executive is the only executive representative on the board, with the remaining board members being independent directors. These have two main duties, which are to challenge proposed and executed strategies (Calkoen 2011). Board size is usually between eight and twelve members, including both academics and practitioners, and should be of an appropriate size that can accommodate the necessary skill sets and competences, as well as promoting flexibility, cohesion and effective participation (Lipton & Lorsch 1992). Generally, there are two main broad mandates: advising and monitoring. More specifically, six general responsibilities are outlined under these two board mandates, namely recruiting, supervising, retaining, evaluating and compensating managers; developing the direction of the company's operations; establishing suitable policies based on the governance system; governing the company; upholding the fiduciary duty to protect company's assets and members' investments; and performing a monitoring and controlling function (Boland 2009). The members of the board of directors are required to act in good faith, have a reasonable knowledge of the company's business, obtain credible information on each issue, and fully consider the consequences of decisions in order to serve the best interests of the company and to protect shareholder gains (Schaeffer 1985; Block, Barton, & Radin 1998; Baums & Scott 2005).

There are several advantages to the one-tier system. First, it has a superior flow of information because of its structure and size. It involves a greater number of meetings and every member is required to be present. At the same time, the members are in

constant contact with the executives, which can help to better understand and promote the supervisory function of the board in management decision making. Second, it is a structure that allows faster decision making. As the supervisory board and management are combined, no separate approval of decisions is needed. Finally, the board is allowed to better understand and be involved in the business of the company. Members with rich relevant business knowledge, combined with frequent formal board meetings, encourage the directors to challenge potential strategic problems (Jungmann 2006; Block and Gerstner 2016).

On the other hand, the one-tier system also has disadvantages, the main one being less working efficiency. The board has to simultaneously make and monitor the same decisions. When it is small, close personal relationships between members can exist, making it difficult for them to be neutral (Block & Gerstner 2016).

2.4.2 Two-tier System

The two-tier system, also called the 'Continental Europe model', is a corporate structure system that comprises both the management and supervisory boards. The management board makes decisions on company objectives, while the supervisory board monitors their decisions and behaviour (Jungmann 2006; Bolck & Gerstner 2016). The supervisory members can represent any class of people who are relevant to the firms, apart from the directors and management (Jungmann 2006; Block & Gerstner 2016). This board system exists in some continental European countries, such as Germany,

Austria and the Netherlands. In 1993, China also introduced this board system for corporate governance.

There are also advantages and disadvantages to the two-tier system. Generally speaking, it allows for better monitoring and its structure is more of a reflection of stakeholder primacy. Taking the German board system as an example, the managing institution is strictly separated from the controlling institution, which contributes to enhancing the boards' functions. Moreover, the members of the boards are required to represent not only shareholders but also employees and other stakeholders, to protect both shareholders' and the public's interests (Jungmann 2006; Block & Gerstner 2016). However, the supervisory board in a two-tier system, being internal, always obtains information from company management, who may provide information together with their personal opinions, which may cause a problem of information asymmetry, in comparison to external supervisory institutions (Böckli 2009; Hommelhoff & Hopt 2009; Block & Gerstner 2016). In addition, when a certain decision is made by management, waiting for ratification from the supervisory board may lead to costly delays and ineffective work (Douma 1997; Block & Gerstner 2016).

2.4.3 One-tier vs. Two-tier Boards

Comparing the one-tier and two-tier board systems, there are several differences, namely board size, compensation, and shareholder versus stakeholder interests. First, the members of the one-tier board comprise around ten people, while those of the twotier board could number over twenty. Previous research has argued that board size

influences a firm's performance and effectiveness. Some researchers have proposed that a larger board could damage firm performance because of the increased problems of communication and the decreased ability to control management. Moreover, a larger board is less flexible and responsible, which leads to less effective oversight of management (Eisenberg, Sundgren, & Wells 1998; Guest 2009; Lublin 2014). Second, the compensation of the directors is regulated differently and further reflects different governance norms. For instance, American board directors' compensation is set by the board in consultation with compensation experts, while that of their German counterparts is decided by the supervisory board. In comparison, the compensation of the German management board has limited freedom. Third, the core aim of the one-tier board is to satisfy shareholder benefits, while the two-tier system is more likely to benefit stakeholders. This difference is reflected in laws and regulations as well as in board composition.

2.4.4 Two-tier System in Germany

The explanation of the development of the German two-tier system can be derived from agency theory. Shareholders would like to maximise their profits and will avoid a sub-optimal corporate governance system. However, management has executive control of the company and probably runs the risk of sacrificing shareholders' returns. As a result, the separation of interests produces agency costs. Besides, compared to focusing supervision in the hands of someone specialised, building a supervision organisation and staffing it by the shareholders themselves can save agency costs. Therefore, the

supervisory board is a rational choice as a specialised and separate board, untainted by conflicts of interest related to management (Li 1994; Block & Gerstner 2016).

The resource dependence theory, which posits that externally available resources affect company behaviour, offers another explanation for the two-tier board system. German companies depend on external resources such as employees and outside capital from banks, so employee and bank representatives on the supervisory board are necessary and important. Companies can inform on their situation continuously and make refinancing decisions positively. As a result, instead of shareholders of both boards, stakeholders are able to gain outside resources more efficiently (Jahn 1993; Fearfull et al. 2010; Schüler-Zhou & Schüller 2013).

2.4.5 Two-tier System in China

China is another typical example of a two-tier board system. Since 1993, the Corporate Law of the People's Republic of China ("Corporate Law") requires listed firms to have both a board of directors (BoD) and board of supervisors (BoS). According to the provisions of the People's Republic of China ("Corporate Law"), a limited liability company is required to set up a board of supervisors, which shall comprise at least three persons.[1] A limited liability company which has relatively fewer shareholders or is relatively small in scale may have one or two supervisors and does not have to establish a board of supervisors.[2] The board of supervisors shall include representatives of

[1] Article 52, the Corporate Law.

[2] Article 52, the Corporate Law.

shareholders and employees of the company at an appropriate ratio. The employee representatives, who serve as members of the board of supervisors, should be democratically elected by the employees of the company through meetings of the employee representatives or employees, or by any other means.[3] No director or senior manager may concurrently work as a supervisor.[4] There are several responsibilities of the supervisory board, including checking the financial affairs of the company; supervising the duty-related acts of the directors and senior managers; bringing forward proposals on the removal of any director or senior manager who violates any law, administrative regulation, article of association or any resolution of the shareholders' meetings; demanding that any director or senior manager makes amendments if their act has injured the interests of the company; proposing the convening of temporary shareholder meetings and bringing forward proposals at such meetings, and initiating actions against directors or senior managers according to relevant articles of corporate law.[5] The members of the supervisory board can attend the meetings of the board of directors as non-voting delegates and raise questions or suggestions on the matters to be decided by the board. They can make investigations or hire an accounting firm for help when necessary if they find the company is running abnormally.[6]

In summary, the functions of the supervisory board are three-fold. First, it acts as a counsellor. For a small firm, which is owned and managed by only one entrepreneur,

[3] Article 52, the Corporate Law.

[4] Article 52, the Corporate Law.

[5] Article 54, the Corporate Law.

[6] Article 55, the Corporate Law.

the supervisory board performs the role of a trusted advisor to the entrepreneur and counsellor to the management. For a large company, the supervisory board is not only the witness to management strategies but also makes comments and criticism to improve the strategic vision. Second, the supervisory board ratifies important decisions made by management. It should play its role correctly in order to judge management's important decisions about the firm's development and to avoid destroying value. Finally, the most important function of a supervisory board is to monitor the performance and composition of the board of directors and management, in case of any illegal or unethical behaviour which might harm firm interests.

Similar to the German two-tier system, the development of the Chinese two-tier system derives from agency theory (Rajagopalan & Zhang 2008; Conyon & He 2011). Additionally, some researchers suggest that the stewardship theory offers another explanation for the Chinese two-tier board system. This theory stresses that there is a strong relationship between managers and the success of a firm because the managers will protect and maximise shareholder wealth by improving firm performance (Davis, Schoorman, & Donaldson 1997; Daily, Dalton, & Canella 2003). The management of Chinese companies pays more attention to satisfying the interests of inside shareholders because of the concentrated and state-controlled ownership structure (Tian & Lau 2001; Chen, Ezzamel & Cai 2011; Conyon & He 2011).

2.4.6 Comparing German vs. Chinese Two-tier Systems

Although the Chinese supervisory board has been borrowed from Germany, there are two main differences between the two two-tier systems (Block & Gerstner 2016). First,

the authority and status of the German supervisory board are much higher than the Chinese one. The members are elected by shareholders and they not only monitor management but also inspect the board of directors and their operations. The German supervisory board has important decision rights, such as selecting the members of the board of directors, deciding on their remuneration, and even the right to withdraw the appointments of directors. In contrast, the Chinese supervisory board is much more dependent and lacks power. It can only act as a counsellor and make comments on and criticise management decisions. It does not have any election or voting rights over the board of directors and its decisions. The Chinese board will report to the shareholders

and wait for solutions if they find problems with a firm's operation and decisions, which means it works inefficiently. Second, the German supervisory board must have an equal number of employee representatives and members who represent shareholders. The employee representatives must include at least one senior staff representative and representatives of the union. These employee representatives are supported by the union to ensure they are able to exercise power. Moreover, there is codetermination in German supervisory boards; as allowed by the law, employees can elect representatives to consult and participate in company decisions at the same level as management. Codetermination helps to protect the interests of the firm and its employees (Wiedemann 1980; Gorton & Schmid 2000; Renaud 2007). However, the employee representatives on the Chinese supervisory board lack support, because there is no relevant organisation such as a union that could offer them protection. As a result, the function of employee supervisors is practically ineffectual.

2.5 Ownership Structure

Companies are owned by different types of investors, who are also responsible for accomplishing financial objectives. There is inside ownership, such as board members, executives and employees, and outside ownership, such as stockholders, agent owners, and private owners (Connelly et al. 2010). Previous research has provided evidence on corporate ownership with regarding to various topics, including dividend policy. Sections 2.5.1, 2.5.2, and 2.5.3 describe how several main types of shareholders, including state-owned, institutional and managerial, influence dividend policy in different ways, as explained by different theories.

2.5.1 State-owned Shareholders

When a company's shares are mainly held and controlled by the state, it is known as a state-owned holding company. Such a company is a special enterprise legal representative authorised by the state to specifically exercise the rights of assets, take major decisions, and elect managers and elect other funders of some state-owned assets. State-owned holding companies can be divided into two types: the pure-type holding company, which does not directly engage in production and business activities but controls other companies or enterprises by wholly or partly owning shares or equity in them; and the hybrid holding company, which mainly controls subsidiaries through shareholding, and directly performs some production and operation activities. The total capital invested by such holding both types in wholly-owned subsidiaries, holding

subsidiaries and shareholding subsidiaries must exceed 50% of the registered capital, and the total capital used for direct production and operation must be less than 50% of the company's registered capital. In their relationship with subsidiaries, they exercise the rights of the funder, and indirect production and operation activities, they also enjoy the property rights of the legal person (Szamosszegi & Kyle 2011; Ho, Ho, & Young 2013; Sheng & Zhao 2013).

Research into government ownership refers to various topics, such as the correlation between government ownership and firm value, costs, investments and stock price variation (Boubakri, Cosset, & Guedhami 2009; Borisova & Megginson 2011; Ben-Nasr, Boubakri, & Cosset, 2012; Chen et al. 2013; Ben-Nasr & Cosset 2014). Besides these aspects, the correlation between government ownership and dividend payment has also been explored. Much research has studied how state-owned ownership impacts cash dividend payout and found a positive correlation between such ownership and dividend policy (Wang, Manry, & Wandler 2011; Lam, Sami, & Zhou 2012; Bradford, Chen, & Zhu 2013). Government ownership is a form of, or at least is similar to, institutional ownership, preferring a higher dividend payout to enhance managerial monitoring by external capital markets, especially when it is believed that direct monitoring efforts may be insufficient or too costly (Gul 1999). According to agency theory, state-owned shareholders prefer higher cash dividends to reduce conflicts with management (Wang et al. 2011). For example, Gugler (2003) examines the correlation between dividend payments and controlling ownership structure in Australian firms and suggests that state-owned firms are engaged in dividend

smoothing, while family-controlled ones are not. In addition, state-owned firms are more reluctant to cut dividends than family-owned ones. Nizar Al-Malkawi (2007) examines the determinants of dividend policy in the emerging market of Jordan and suggests that the shareholding ratio of insiders and state ownership significantly affects dividend payout policy, which strongly supports the agency hypothesis.

Other theories are also used to explain the correlation between government ownership and dividend policy, such as clientele theory, tunnelling theory and the capital constraint hypothesis (Lee & Xiao 2004; Cheng, Fung, & Leung 2009 Wang, Manry & Wandler 2011; Bradford, Chen, & Zhu 2013, Lin, Chen, & Tsai 2017). For instance, some researchers suggest that the dividend payments of Chinese firms are a form of tunneling, particularly by state-owned firms, in order to divert proceeds from an IPO or rights issue to controlling shareholders' pockets (Lee & Xiao 2004; Chen et al. 2009). Researchers such as Bradford et al. (2013) also suggest that in China statecontrolled companies pay higher dividends than privately controlled ones because of the capital constraint hypothesis, which suggests that the former are less capitalconstrained when obtaining external equity and do not greatly depend on internal equity for financial growth.

2.5.2 Institutional Shareholders

Institutional shareholders refer to ownership which is held by large financial organisations, such as banks, insurance companies and investment firms. Institutional investors usually study entire industries and evaluate companies in depth before making

investment decisions as they are usually large stock traders (Choi, Lee, & Williams 2011). As a result, such shareholders may influence stock prices and dividend payments. Since the 1970s, there has been a trend of institutionalisation of securities investment in the securities markets of Western countries. Institutional investors' market share was 30% in the 1970s and 70% in the early 1990s. Institutional investors have therefore become the main force in the securities market (Çelik & Isaksson 2014).

As strong external investors, institutional investors have the ability and motivation to participate in corporate governance and play a supervisory role. It has been suggested that institutional shareholders alleviate agency problems because they are large investors who hold huge sums of money, and the continued increase in share ownership gives them a strong incentive to monitor company performance and management behaviour (Demsetz & Lehn 1985; Short, Zhang, & Keasey 2002; Ullah, Fida, & Khan 2012). Cash dividends are an important company financial decision, which is significantly related to the interests of shareholders, no matter whether they are controlling or minority shareholders, or state-owned or institutional investors. Therefore, to balance the rights of major shareholders and alleviate the agency problems between shareholders and management, institutional investors will inevitably have a certain impact on cash dividend policy. To enhance managerial monitoring by external capital markets, especially when institutions question their own direct monitoring efforts as insufficient or too costly, they may prefer a higher dividend payout, which has a positive impact on dividend policy (Han, Lee, & Suk 1999; Short, Zhang, & Keasey 2002; Farinha 2003). At the same time, institutions may be better informed, and

this informational advantage could be manifest in different attitudes toward dividend payout policy (Amihud & Li 2006). The higher the shareholding ratio of institutional investors, the greater the initiative to collect important information about the company and supervise the behaviour of internal management. As a result, based on this information asymmetry, institutional shareholders help to alleviate agency problems by reducing internal friction and reducing conflictions of other investors (La Porta et al. 2002).

Other research has also proven that the correlation between institutional shareholders and dividend policy can be explained by the clientele effect. Institutional investors change their investments based on their own tax preferences and other demands. As a result, firms will also adjust their dividend policy according to clientele incentives and the correlation between institutional ownership and payout policy is comprehensive and mutual (Dhaliwal, Erickson, & Trezevant, 1999; Myers & Bacon 2004; Grinstein & Michaely 2005; Desai & Jin 2011).

2.5.3 Managerial Shareholders

Management involves the administration of an organisation, including many senior to lower positions, such as Chief Executive Officer (CEO), Chief Financial Officer (CFO), Chairman, managers and supervisors. Similar to the other types of ownership, managerial shareholders also influence dividend policy significantly.

Based on agency theory, most studies conclude that cash dividends are a mechanism for reducing the problem of overinvestment. Managers are more likely to

spend firm capital on investments or increase consumption for their own benefit or compensation when there are excess cash flows (Easterbrook 1984; Jensen & Meckling 1976; Rozeff 1982; Myers & Bacon, 2004). As a result, cash payouts can reduce the agency problems of free cash flow (Jensen 1986; Jensen, Solberg, & Zorn 1992). When managers hold a number of shares, they will stand by shareholders and conflicts of interest between them and outside shareholders could be reduced. Some research finds evidence to support the notion that managerial share ownership aligns the interests of managers with those of shareholders, as managers are less likely to engage in actions that are not in the interest of shareholders. A high level of managerial ownership could minimise agency problems, as managers would have to bear a portion of the losses arising from any divergent behaviour (Jensen & Meckling 1976; Morck, Shleifer, & Vishny, 1988). The association between managerial ownership and dividend policy has been extensively examined in various empirical studies (Rozeff 1982; Agrawal & Jayaraman 1994; Moh'd, Perry, & Rimbey 1995; White 1996; Fenn & Liang 2001; Short, Zhang, & Keasey 2002).

2.6 Corporate Ownership Concentration

2.6.1 Introduction

Discussion of the problem of concentrated corporate ownership began with the dividend agency cost theory of Jensen and Meckling (1976) and Easterbrook (1984). Later, scholars and experts began to apply agency theory to further interpret and research the "mystery of dividends" based on their theoretical research. Distribution of stock among

shareholders has a significant impact on corporate actions that are dependent on shareholder voting. Majority control gives larger shareholders considerable power and discretion over key decisions, such as dividend decisions and payout ratios (Gugler 2003). La Porta et al. (2002) argue that the central agency problem in large corporations around the world restricts the expropriation of minority shareholders by controlling shareholders. If company insiders are controlling shareholders, while external shareholders hold comparatively much fewer shares, the controlling shareholders are more likely to expropriate the minority shareholders. This preference for dividends may be even stronger in emerging markets with weak investor protection (Mitton 2004). Besides the agency problem between majority and minority shareholders, there is also a conflict between internal and external investors. Firms that pay more dividends will have less wealth for controlling shareholders to extract private gains, and corporate insiders can divert profits and other resources to benefit themselves by reducing the expense of outside investors (Johnson et al. 2000, Su et al. 2014).

In addition, when there is a large divergence between controlling and cash flow rights, the controlling shareholders will tend to control the resources of companies through active participation in board meetings and management appointments, and they have the ability to pursue their own benefits through related party transactions (Claessens, Djankov, & Lang 2000; La Porta et al. 2002). Controlling shareholders are less likely to be challenged by other shareholders when they expropriate minority shareholders (Zingales 1994, 1995; Nenova 2000; Dyck & Zingales 2004). If large shareholders can benefit not only from cash dividends but also from price appreciation

of shares, there will be no conflicts of interest between large and minority shareholders (Denis & McConnell 2003). However, if large shareholders fail to realise capital gains from free trading and their sole investment income source is cash dividends, they will have a strong incentive to ask for large cash dividends, which leads to a firm's underinvestment and decrease in value.

If control rights are consistent with cash flow rights, the major shareholders should be inclined to choose the lowest cost and most legally protected way to realise their own interests. As a result, the controlling shareholders may adversely impact the interests of the minority shareholders by also paying cash dividends. Shleifer and Vishny (1997) suggest that the more concentrated the equity and the higher the shareholding ratio of the major shareholders, the lower the cost of distribution and the more likely the major shareholder will be to distribute dividends in the normal way. However, the degree of infringement of major shareholders' resources will be different due to the difference in the claims of other small-cap stocks. When the major shareholder has greater control over the listed company and the control rights and cash flow rights also tend to be the same, the cost of achieving the self-interest of the major shareholder becomes lower.

Therefore, when the largest shareholder infringes on the interests of the remaining shareholders, at the same time the other shareholders will also have the incentive to resist and monitor the largest shareholder (Edwards & Weichenrieder 1999; Faccio, Lang, & Young 2001). As the controlling shareholders are concerned with the trade-off between the agency problem of free cash flow and the risk of underinvestment, the

voting power of the remaining shareholders' coalition can confront the power of the largest shareholder (Trojanowski & Renneboog 2005). This leads to a negative correlation between the concentrated controlling shareholding ratio and cash dividend payout (Trojanowski & Renneboog 2005, 2007).

2.6.2 Empirical Evidence

Previous research has explored the relationship between ownership concentration and dividend policy, obtaining different results. As is known, dividends are viewed as a substitute mechanism for large shareholder ownership in mitigating agency conflicts. Shleifer and Vishny (1997) find that when equity is more concentrated and the shareholding ratio of the major shareholders is higher, the cost of paying the dividend is lower and the major shareholders are likely to distribute dividends in the normal way, which supports the notion that highly concentrated ownership helps to alleviate agency conflict. Based on a sample drawn from 37 countries, Truong and Heaney (2007) also observed a positive association between the largest shareholder and dividend payouts. More recently, Ahmed and Javid (2008) suggested that ownership concentration is positively related to the dividend payout ratio in Pakistan.

However, some research has found a negative correlation between ownership concentration and dividend payment, especially in some emerging markets with low protection (Maury & Pajuste 2002; Gugler & Yurtoglu 2003; Mancinelli & Ozkan 2006; Renneboog & Szilagyi 2006; Renneboog & Trojanowski 2007). Da Silva et al. (2004) even found a U-shaped relationship between paying dividends and the voting rights of

the largest shareholder. They propose that dividends first increase and then decrease when the voting rights of the largest shareholder become stronger.

Some research has also studied the effect of other large shareholders besides the largest one, based on agency hypothesis. Some companies have two or more large shareholders, which means that corporate policy is the result of interaction among several large shareholders (Bennedsen & Wolfenson 2000). The role of other major shareholders other than the largest includes incentives and the ability to balance and supervise the largest shareholder, so the cash dividend payout ratio is inversely related to its shareholding ratio (Bolton & Von Thadden 1998; Pagano & Roell 1998; Edwards & Weichenerrieder 1999; Faccio et al. 2001). On one hand, the monitoring role played by the other large shareholders could limit the expropriation of minority shareholders' resources, while on the other, other large shareholders may collude with the controlling shareholder in expropriating corporate resources and sharing the private benefits (Pagano & Roell 1998; Faccio et al. 2001).

Faccio, Lang, & Young (2001) found that in Europe, the presence of multiple large shareholders can minimise the expropriation activities of controlling shareholders towards minority shareholders, resulting in higher dividend payment. However, a lower dividend payment occurs in Asia, which suggests that controlling shareholders collaborate with other large shareholders to expropriate the minority shareholders. Renneboog and Trojanowski (2007) also propose that there is a negative impact on the dividend payout ratio when the equity and voting rights are concentrated in the hands of a major shareholder alliance, but that this effect varies between types of shareholders.

Other studies have particularly explored the impact of the second-largest shareholder on dividend policy, with mixed results. For example, Maury and Pajuste (2002) found that dividend payouts were negatively related to the second-largest shareholder in Finland, while Gugler and Yurtoglu (2003) suggest that there is a positive relationship between the second-largest shareholder and dividend payouts in Germany.

2.7 Characteristics of Chinese Ownership

2.7.1 Introduction

Chinese ownership has two significant features: first, a relatively high number of listed firms are state-owned or a large number of shares are held by the government; and second, firms' stock ownership is highly concentrated, no matter whether the shareholders are government or private ones (institutions and individuals) (Bradford, Chen, & Zhu 2013). As a result, any research into the ownership structure and dividend policy in China will always need to consider these two important characteristics. The following sections will discuss these in detail.

2.7.2 Highly concentrated SOE

Many studies find that state ownership is positively correlated with dividend policy (Wei, Zhang, & Xiao 2004; Lee & Xiao 2004; Wang, Manry, & Wandler 2011; Lam, Sami & Zhou 2012; Bradford, Chen, & Zhu 2013). Some researchers explain this phenomenon by tunnelling theory, in that case, cash dividend policy is dominated by the tunnelling incentive of controlling shareholders' interests (Lee & Xiao 2003; Chen,

Jian, & Xu 2009). State shares in China can only be transferred with special approval by the government, which has the same effect as the transfer of portions of non-tradable shares from the state to other shareholders. As a result, cash dividends could be a vehicle for tunnelling in companies with a state controlling shareholder instead of alleviating agency problems (Lee & Xiao 2004; Cheng, Fung, & Leung 2009, 2013). However, some research disagrees with this tunnelling theory. About half of the listed firms in China do not pay cash dividends and to encourage such payments, the China Securities Regulatory Commission (CSRC) even requires listed firms to pay regular cash dividends if they want to make seasoned equity offerings (SEOs). As a result, the tunnelling motive may not be the key factor that affects dividend policy.

The capital constraint hypothesis is considered to explain the phenomenon of state-controlling ownership and dividend policy. It concludes that non-state-owned enterprises (NSOEs) pay fewer dividends than state-owned enterprises (SOEs) because they are more capital constrained. In China, the public corporate bond market is extremely small. Most business borrowing comes from banks, and over 98% of banking assets are owned and controlled by the state (Barth, Caprio, & Levine, 2006. Banks are known for their soft lending policy toward SOEs and a lending bias against NSOEs, which leads to the situation that it is more difficult for privately-controlled firms in China to raise long-term debt capital compared to SOEs (Brandt & Li 2003; Fan et al. 2008). In addition, the China Securities Regulatory Commission (CSRC) uses a merit-based system to regulate listed firms' share issuance; rights offering or undertaking of

an SEO is tightly restricted for NSOEs, but not for SOEs, because the CSRC is a sister agency, whose political ties are both formally and informally important, and its accepts SOEs that do not meet the requirement to be exceptions when they apply for SEOs if there is an acceptable explanation (Green 2003). As a result, the greater constraint on debt capital and external equity capital puts NSOEs under more pressure regarding internally generated funds, which means fewer dividends are paid by NSOEs than SOEs (Bradford, Chen, & Zhu 2013).

Besides the feature of state control, high ownership concentration is the other significant feature. Related research has found the tendency to pay cash dividends because of the agency problems that large shareholders expropriating minority shareholders (Shleifer & Vishny 1997; Lee & Xiao 2002; Lin, Chiou, & Chen 2010; Wellalagea et al. 2014). A relatively large number of Chinese-listed companies are observed to have a single dominant controlling shareholder and the average shareholding ratio of this shareholder is nearly 50% (Tenev, Zhang, & Brefort 2002; Hu, Tam, & Tan 2010). The highly concentrated ownership leads to a high level of speculation, extensive insider dealing and frequent market manipulation in the Chinese market. Studies of China have discovered a high level of expropriation of the interests of minority shareholders by the majority shareholders (Claessens et al. 2002; Su, Xu & Phan 2008; Hu, Tam, & Tan 2010; Lin, Chiou, & Chen 2010; Wellalagea et al. 2014).

In summary, the above arguments reveal that a highly concentrated ownership structure may affect the quality of corporate governance in different ways, implying that the relationship could be multi-directional.

2.7.3 Corporate Pyramid Ownership

Another factor that affects dividend policy in China is corporate pyramid ownership. The ultimate owners of the pyramid can control multiple resources through a chain of ownership in which they directly control a firm that owns a stake in one or more other firms, and these firms also control other firms in the same way. The corporate pyramid ownership structure is popular around the world because of the private benefits of control rights and is more prevalent in countries with weaker laws and undeveloped economic environments (La Porta, Lopez-de-Silanes, & Shleifer 1999; Claessens, Djankov, & Lang, 2000; Attig, Gadhoum, & Lang, 2003). The pyramid structure is also common in China. In the case of both SOEs and NSOEs, such a structure can establish an efficient internal capital market that helps to reduce external financing constraints (Manos, Murinde, & Green 2012). The internal capital market within pyramids of firms becomes stronger in its allocation of funds across units as the pyramid size increases; in other words, a longer control chain enables greater utilisation of investable funds, but lower surplus funds and cash dividends (Stein 1997; Bradford, Chen, & Zhu 2013).

2.7.4 Related-party Transactions

A controlling shareholder has a strong incentive to maximise private benefits rather than shareholder wealth by occupying firm resources, which is referred to as “tunnelling”

(Johnson et al. 2000; Faccio, Lang, & Young 2001). Although tunnelling is rarely observed directly, many studies have examined specific channels where expropriation can be detected in different areas and countries, such as Hong Kong, Korea and Mexico (Bae, Kang, & Kim, 2002; La Porta et al. 2002; Baek, Kang, & Lee 2006; Cheung, Rau, & Stouraitis, 2006). Related-party transactions are an inverse proxy for quality of corporate governance and have a negative effect on cash dividends. The corporate governance of Chinese firms is quite weak and the controlling shareholders are more likely to expropriate wealth from minority shareholders and external investors and siphon off firms' resources (Berkman, Cole, & Fu 2009; Jiang, Lee, & Yue 2010; Peng, Wei, & Yang 2011).

2.7.5 Semi-mandatory Dividend Policy

Semi-mandatory dividend policy was officially issued by the China Securities Regulatory Commission (CSRC) in 2008, in which listed companies must pay a certain level of dividends as a prerequisite for their refinancing qualifications before they can undertake seasoned equity offerings (SEO). This policy first came out in 2006 and stipulated minimum dividends as a requirement for securities issuance, which had to amount to at least 20% of net profit in 2006, a ratio which increased to 30% in 2008. This policy created the practice in China whereby dividends are connected to the right to issue seasoned equity. At the end of 2013, this required policy confirmed that all listed firms must pay cash dividends each year and that the amount must be at least 20% of firms' earnings. Hence, a mandatory dividend institution was finally introduced in

China. This semi-mandatory dividend policy was enacted by the CSRC because previously Chinese listed firms paid too little dividends and shared too little of their profits with shareholders. Many Chinese firms had seldom paid any dividends to their shareholders in more than 10 years since they were listed (Tao, Nan, & Li 2016).

The Chinese semi-mandatory dividend setting is markedly different from the situation in the U.S., where firms determine the level of dividends to pay independently; it also differs from the mandatory dividend rules in other countries, such as Turkey, Brazil and Greece, where all firms are required to allocate a certain level of dividends (Adaoglu 2000; Dasilas & Leventis 2011; Martins & Novaes 2012). The Chinese semimandatory dividend rule suggests that paying dividends can convey two important types of information, namely a signal of strong free cash flow, and the high likelihood of the issuance of SEOs. As a result, stock prices will not react to dividend payments as strongly as in other markets such as the U.S., as the issuing of an SEO is conditional on these payments (Tao, Nan, & Li 2016).

Some research has studied how semi-mandatory dividend are relevant to dividend policy. It has the policy effects of “positive incentive” and “negative incentive”. The companies that have “positive incentives” would like to pay cash dividends actively to meet the refinancing demands according to their cash flows and investments. However, the companies with weak performance but having refinancing needs will be impacted by the “negative incentive” effect of semi-mandatory dividend policy because they have to distribute dividends and reach the minimum stipulated dividend level (Hu & Ma 2017; Yu 2019). This “negative incentive” has a negative effect on the firm’s value and

increases the agency costs because the companies that are forced to pay dividend consume the internal funds that are already in short supply (Yu 2019). This regulatory pressure could also reduce the company's propensity to pay dividends as well as the level of dividends (Hu & Ma 2017).

2.7.6 Shareholders Right

In developing markets, the main agency problem, a high level of expropriation, occurs between the majority and minority shareholders (La Porta et al. 2000; Claessens et al. 2002), which lead to a low minority shareholder right (Mardani & Indrawati 2018). The relationship between corporate governance and dividend policy could be different because of the degree of shareholder right protection. Some research suggests that there is a positive relationship between better corporate governance and dividend payment when shareholder rights are low while other research proposes that weaker corporate governance influences dividend payment positively udder low shareholders rights (Renneboog & Szilagyi 2006; Kowalewski, Stetsyuk, & Talavera 2008; Change et al. 2018; Mardani & Indrawati 2018). As is well known, the Chinese stock market is not well developed, and corporate governance is weak (Anderson, Ch, & Liao 2019). Some limited research has shown that low minority shareholders rights can influence Chinese dividend policy (Lin, Chiou, & Chen 2010; Wellalagea et al. 2014; Tran 2020).

However, this aspect of research is not considered as shareholder right protection in China is poor due to weak legal environment and there is a serious agency problem between majority and minority shareholders (Mardani & Indrawati 2018; Anderson, Ch,

& Liao 2019). Partly as a result, the main focus is on examining the influence of corporate board structure, investor sentiment and stock liquidity.

2.8 Investor Sentiment and Dividend Policy

2.8.1 Introduction to Investor Sentiment

Investor sentiment refers to the overall attitude of investors towards the stock market, who may be optimist or pessimist about stocks in general. (Baker & Wurgler 2007). Research on investor sentiment has been conducted for a relatively long time. At first, it was considered to be a belief about future cash flows and investment risks that was not justified by present facts, and two assumptions were made. First, Delong et al. (1990) assumed that investors were subject to sentiment, while Shleifer and Vishny (1997) proposed the second assumption, that betting against sentimental investors was costly and risky. As a result, rational investors, who are also called arbitrageurs, are not as aggressive in forcing prices as has been suggested; consequently, whether and how investor sentiment affects the stock market has been proposed.

Later, the question of how to measure investor sentiment and quantify its effects arose. One approach to doing this was to use biases in individual investor psychology, such as representativeness, overconfidence and conservatism, to explain individual investors' underreaction or overreaction to past returns or fundamentals. For example, a related set of models, as discussed by Hong and Stein (2003) and Shefrin (2008), generates misvaluation if it relies on differences of opinion across investors, combined with short sales constraints. These aggregated models can predict the patterns of

investor sentiment, stock prices and volume marketwide. However, this approach may have problems; for example, the models cannot be definitely true, and real markets and investors are too complicated to be summarised neatly by just a few selected biases and trading frictions.

Another approach developed by Baker and Wulgler (2006), based on two broader and more irrefutable assumptions of behaviour finance, namely sentiment and limits to arbitrage, is macroeconomic in nature and focuses on the measurement of reduced-form aggregate sentiment and its effects on individual stocks and market returns. The advantage of this approach is that it encompasses abnormal market performances such as bubbles and crashes, as well as everyday patterns in stock prices in a simple, intuitive and comprehensive way. It is not straightforward to measure investor sentiment in this approach. A number of proxies are suggested to relate to sentiment and can be used as conditioning variables and combined to describe investor sentiment, such as investor surveys, investor mood, retail investor trades, mutual fund flows, option implied volatility, insider trading, closed-end fund discount (CEFD), share turnover, the number of IPOs, average first-day returns on IPOs, the equity share in new issues, and the dividend premium. (Fama & French 2001; Baker & Stein 2004; Baker & Wurgler 2007). These variables are briefly introduced below.

1. *Investor surveys*

Investor surveys refer to the process of asking investors how optimistic they are in order to gain insight into marginal irrational investors. Relevant surveys have been conducted to find the correlation between investors' attitude and confidence in stock market

returns and security prices (Shiller & Pound 1989; Brown & Cliff 2005; Qiu & Welch 2006; Lemmon & Portniaguina 2006).

2. *Investor mood*

Some studies have attempted to explore the correlation between investor mood and stock prices. For example, Kamstra, Kramer and Levi (2003) suggest that through autumn and winter, market returns are on average lower because of seasonal affective disorder, a depressive disorder associated with declining hours of daylight.

3. *Retail investor trades*

Different retail investors have different patterns of trading on the stock market. Compared to professionals, inexperienced retail or individual investors are more likely to be subject to sentiment. Research which has studied retail investor trades has found that investors at different ages preferred different amounts of stocks during the Internet bubble (Greenwood & Nagel 2009), while other research has found that retail investors buy and sell stocks in concert in micro-level trading data, which is consistent with the systematic sentiment (Kumar & Lee 2006; Barber, Odean, & Zhu 2009).

4. *Mutual fund flows*

Mutual fund flows, a variable that is related to investor sentiment and is easily available, has been used as a proxy for the sentiment. Overall market sentiment can be measured based on the trading movement of fund investors (Brown et al. 2003). Frazzini and Lamont (2005) found evidence that if a particular stock holding by a fund experiences strong inflow, its subsequent performance is relatively poor.

5. *Insider trading*

The patterns of insider trading may contain a systematic sentiment component and are able to predict stock returns (Seyhun 2000). Insider trading refers to the use of corporate insiders of private information to trade their own stocks strategically for personal gain. This has been proven to influence stock prices and returns. Some research has found that insider sales before the offering of new stock generally elicits negative stock price reactions (Lamba & Khan 1999; Seyhun 2000). Other research suggests that positive returns follow insider purchases, while negative returns follow sales (Seyhun 2000; Iqbal & Shetty 2002; Chiang, Chung & Louis 2017).

6. *Closed-end fund discount*

Closed-end fund discount (CEFD) is the average difference between the net asset values (NAV) and market prices of closed-end stock fund shares and is inversely related to sentiment (Zweig 1973; Lee, Shleifer, & Thaler 1991; Neal & Wheatley 1998). Closedend funds are the fixed number of shares issued by investment companies and traded on stock exchanges. When closed-end funds are disproportionately held by retail investors, the average discount on closed-end equity funds could be a sentiment index, and the discount will increase when retail investors are bearish.

7. *Share Turnover*

Share trading volume, which is also market liquidity, can also be viewed as an investor sentiment index. Previous research on trading volume has revealed underlying differences in investors' opinions (Scheinkman & Xiong 2003; Baker & Stein 2004).

8. *IPO market*

IPO volume, the underlying demand for initial public offerings (IPO), and IPO firstday returns, the average first-day returns of initial public offerings, are both suggested to be extremely sensitive to investor sentiment (Ljungqvist, Nanda, & Singh 2006; Baker & Wurgler 2006).

9. *Equity share issues*

Equity share issues are the share of equity issues over total new issues, which is the sum of equity and debt issues. It is a broad measure of equity financing activity. Previous researchers, such as Baker and Wurgler (2000), have proven that high values of equity share issues portend low stock market returns. Firms that shift between equity and debt successfully can reduce the overall cost of capital.

10. *Dividend premium*

The dividend premium is the difference between the average market-to-book value ratios of dividend payers and nonpayers. Many studies have found that firms' propensity to pay dividends increases when dividends are at a premium, and vice versa. As a result, dividend premium can reflect firms' catering to prevailing sentiment when deciding to pay dividends or not (Baker & Wurgler 2004; Li & Lie 2006).

2.8.2 Evidence on Investor Sentiment and Dividend Policy

The demand for dividends by investors varies over time and can be reflected by "sentiment" (Long 1978). For example, investors may prefer safe dividend-paying stocks in low-sentiment periods such as recessions, while in good times such as booms, they may prefer risky stock (Baker & Wurgler 2004; Gemmill 2005). When investors

look forward to a cash dividend payment and a dividend premium, firms would like to cater to their demands, which is known as the catering theory (Baker & Wurgler 2004; Li & Lie 2006; Ferris, Sen, & Yui 2006). Many studies have examined and agree with the positive relationship between investor sentiment and dividend payment. The studies suggest that high sentiment means that investors are optimistic about the stock market and they may overprice stocks. Firms prefer to pay cash dividends to attract cash flow and resources from outside. Conversely, if there is low sentiment, the attitude by investors towards the stock market is pessimistic, which leads to an undervaluation of stock prices. In this situation, firms prefer a more efficient internal capital market that helps to reduce external financing constraints and reduce cash dividend payments (Bulan, Subramanian, & Tanlu 2007; Yao et al. 2012; Baker, Weigand & Kapoor 2015; Baker & Weigand 2015; Caliskan & Doukas 2015). As a result, high sentiment could influence dividend policy positively.

However, some research contradicts the catering hypothesis. DeAngelo, DeAngelo, & Skinner (2009) suggest that the disappearance of dividends due to a more concentration of large dividend payers. The number of dividend payers declined as a result of small dividend payers stopping payments. However, large dividend payers increased their current dividend payments. Similar findings were presented by Denis and Osobov (2008) for firms in several countries, including the U.K., Canada, Germany, France and Japan, while other researchers, such as Von Eije and Megginson (2007), DeAngelo, DeAngelo, & Skinner (2009) and Hoberg and Prabhala (2009) were unable

to find evidence to support the catering theory. As a result, the relationship between dividend policy and investor semtiment still needs to be developed.

2.9 Stock Liquidity and Dividend Policy

2.9.1 Introduction to Stock Liquidity

The ability to trade large volumes of stocks with the least price impact, cost, and postponement is termed "liquidity" (Kumar & Misra 2015). Liquidity has multidimensional characteristics, such as tightness, immediacy and depth, which cannot be captured in a single measure (O'Hara 2004). It has important implications for stock markets and impacts corporate finance decisions on, for example, dividends, stock splits, firm valuation and capital structure (Kumar & Misra 2015). The development of stock markets is influenced by the level of liquidity. In an illiquid market, investors make higher gains, along with large uncertain transactions, which may cause significant price volatility, resulting in higher losses in comparison to liquid markets. As a result, high illiquidity lowers capital inflows and impedes the development of the stock market. At the same time, higher stock liquidity can help to reduce firms' capital costs. A better understanding of liquidity dynamics helps managers to improve their trading strategies (Domowitz & Wang Beardsley 2002; Coughenour & Saad 2004).

Previous research has extensively studied the measurements and determinants of liquidity and its implications for corporate finance and asset pricing. Different proxies have been developed to describe liquidity in terms of various characteristics. For example, bid-ask spreads, the sum of buying premiums and selling concessions, is one

of the measures of liquidity. Assets that are traded at once without a loss are more liquid. Investors may choose to trade immediately at the current bid or ask price or wait until there is a favourable price for them. The ask price can reflect the premium for immediate buying, while the bid price similarly reflects the concession requirement of an immediate sale. As a result, the spread between the bid and ask prices shows the degree of liquidity (Keynes, 1930). The Hui-Heubel (1984) liquidity ratio attempts to capture market breadth with related price impacts of the trading volume. The Amivest measure, introduced by Cooper, Groth and Avera (1985), measures liquidity by daily volume. The limitation of this measure is that it cannot incorporate days without trading or ones with no returns. Saar and Lybek (2002) classified the measures of liquidity into four categories, namely transaction cost, volume-based, equilibrium price-based and market-impact measures, based on their ability to capture a particular characteristic. Amihud (2002) proposed a measure called illiquidity (ILLIQ) to capture the lack of liquidity by dividing daily returns by daily volume in dollars, which can show how prices fluctuate triggered by a unit of dollar volume. Some researchers, such as Goyenko, Holden and Trizinka (2009), conclude that Amihud's (2002) measure is better at capturing liquidity compared to the other measures.

As liquidity has multidimensional features, measures of it vary and they can produce different results, which point to different conclusions (Kyle 1985; Benić & Franić 2008). Some studies conclude that there is actually no theoretically correct or universally accepted definition and measure for liquidity because of the specific factors and peculiarities of the market (Baker 1996; Sarr & Lybek 2002).

2.9.2 Evidence on Liquidity and Dividend Policy

As liquidity depends on firms' abilities to convert assets into cash to meet debts or other obligations, this could affect the attractiveness of stocks to investors and the level of dividend payments (Griffin 2010; Ahmed 2015). Specifically, it is considered to influence dividend policy for several reasons, as explained by different theories. First, according to the clientele transaction cost view, there is a negative relationship between stock liquidity and dividend payment because investors can create homemade dividends without cost by selling their holdings in a financial market with trading friction. As a result, firms with less liquid stocks are more likely to pay cash dividends (Banerjee, Gatchev, & Spindt 2007). Second, the informational effect view argues that higher liquidity helps to reduce information asymmetry between outsiders and insiders and restrains the incentives of the former to expropriate from the latter for personal interests, which means stock liquidity influences dividend policy positively (Kyle 1985; Stiglitz 2000; Leuz, Nanda, & Wysocki 2003; Laporta et al. 2002). Third, stock liquidity is related to a firm's maturity, including size, profitability and growth opportunities, which demonstrate the ability of a firm to pay a dividend (Banerjee, Gatchev, & Spindt 2007). For example, the higher the liquidity, the more companies are able to invest in positive net present value projects, meaning the amount of dividend payments is reduced (Becker-Blease & Paul 2006; Banerjee, Gatchev, & Spindt 2007; Griffin 2010).

Kania and Bacon (2005) studied how the characteristics of a company, including liquidity, risk, and profitability, could influence dividend policy and confirmed that the

dividend payout ratio is significantly affected by these factors. Aivazian, Gatchev, and Spindt (2007) made a cross-section analysis based on NYSE and AMEX firm databases and suggest that firms with less liquidity are more likely to pay cash dividends. Banerjee, Gatchev, and Spindt (2007) also found a negative relationship between dividends and stock market liquidity, interpreting this as a sign that dividends and liquidity are viewed as substitutes by investors. AI-Kuwari (2009) investigated the dividend policy of listed firms in the Gulf Co-operation Council (GCC) countries and found a strong negative impact of the leverage ratio on dividend payment. Gill, Biger, and Tibrewala (2010) studied firms in the American services industry and confirmed that the debt-to-equity ratio is one of the important determinants of dividend payment. This conclusion is further confirmed by Sim's (2011) research of Malaysian listed companies in the food industry. Igan, de Paula, and Pinheiro (2010) also found evidence that the link between liquidity and dividend payment will be stronger when firms' shareholders are more powerful. Finally, Ahmed (2015) proved that there is a significant positive correlation between liquidity and the dividend payout ratio in his study of the banking sector in the UAE. In summary, dividend policy and market liquidity have been extensively studied, butthe results vary and involve different hypotheses. The relationship between dividend policy and market liquidity still needs to be developed.

2.10 Conclusion

This chapter has provided a comprehensive review of the theories and knowledge relevant to the scope of this research in conducting an empirical analysis of factors

influencing dividend policy while taking account of corporate governance, ownership structure and investor sentiment in Chinese stock markets. The issues covered include theories of dividend policy and corporate governance followed by a comparison of various models of corporate governance with reference to the institutional background in China. In this regard, attention is paid to different types of ownership structures influencing dividend policy and the institutional background of Chinese companies operating in an environment where issues of investor sentiment and stock market liquidity are important. The relevant theories and evidence pertinent to these issues discussed in this chapter are intended to serve as a background to support the empirical research carried out in later chapters. Specifically, previous research examines the association between supervisory board and dividend policy from different aspects combining the relevant features of stock markets and national policies (Jungmann 2006; Roth 2013; Block & Gerstner 2016), issues that have not been extensively investigated in the context of Chinese stock market. This research extends the literature by examining how the two-tier supervisory board structure influences dividend policy of listed firms in China that have concentrated ownership structures. Additionally, previous research mainly investigates how investor sentiment and stock liquidity influence dividend policy by testing relevant theories without taking account of the influence of specific market structure prevalent to the local environment. By considering the specific nature of corporate structures in the Chinese stock market, this research aims to fill the gap related to how investor sentiment and stock liquidity affect

dividend policy, while allowing for the effects of controlling shareholders and ownership structures of Chinese listed firms.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the methodology employed in the empirical analysis. After a brief overview of the research philosophy, this chapter is concerned with presenting the empirical models used in testing a number of hypotheses to be formulated. The literature review in Chapter 2 revealed that a good deal of research has been carried out on dividend policy but there is still scope for conducting further research specifically with regard to factors related to corporate governance, ownership structure, investor sentiment, and stock market liquidity explaining the likelihood of dividend payouts in China.

The purpose of this chapter is to explain the methods by which this gap in knowledge could be addressed by the study in hand. In section 3.2, the research philosophy which underpins the study is examined, explaining how this philosophy (i.e. positivism) influences the choice of a quantitative approach, thus providing a rationale for the research design. Then, in section 3.3, the data collection procedure is described including the criteria for data selection of Chinese listed firms. Section 3.4 covers the empirical models including the variables used to test the postulated hypotheses, and the appropriate estimation methods. This section is split into three parts, covering the three broad issues (discussed in Chapter 1) to be examined empirically in subsequent chapters.

3.2 Research Philosophy

Researchers adopt methodologies based on their individual assumptions about how they view the world. This has implications for the selection of specific methodologies to answer a given study's research objectives. The current research relies on a positivist paradigm which is closely linked to a natural sciences perspective. This framework asserts that credible data can only be obtained from real world phenomena which can be empirically observed. Any research strategy linked to this philosophy, therefore, involves the use of existing theory to develop hypotheses which can then be confirmed or disputed based on analysis of the collected data (Saunders et al., 2015).

Research undertaken within the positivist paradigm is intended to remain independent of individual value judgements and instead exhibit a high level of objectivity when compared to other approaches (e.g. interpretivism) which involve a more subjective type of data collection. It is therefore argued that positivist data collection methods effectively prevent any bias on the part of the researcher from being transferred onto the data to be analysed (Saunders et al., 2015). These methods are usually rigorously structured with the intention of enabling replication (Gill & Johnson, 2010). The type of data used in this study is secondary (i.e. collected by a third party) and quantitative (primarily generated and analysed through statistical means). Specifically, the data comprise various metrics lifted from the financial records of the sampled firms.

The literature review in Chapter 2 suggests that various factors linking with dividend theory underpin the scope of the current research. But to ascertain the

empirical evidence, data collection is required, and the analysis techniques are generally classified as either quantitative or qualitative. Data collected through qualitative methods are usually non-numeric in nature and are intended to reflect the beliefs, opinions, relationships, behaviours, social environments, and events that individuals experience (Ghauri & Gronhaug, 2005). Quantitative data, on the other hand, are numeric in nature, and the methods of analysis are typically mathematical or statistical (Muijs, 2010).

The two approaches confer certain advantages and disadvantages over each other. Saunders et al. (2015) confirm that the techniques and procedures selected by a researcher can have an impact on the results of a study. Sometimes researchers mix methods in an attempt to cancel out the 'method effect' and thus increase the reliability of the study's conclusions. In this study, the researcher attempts to determine the nature of the relationships between various dependent and independent variables. For this reason, a quantitative approach is considered most appropriate and, by way of extension, a quantitative method of data collection will be employed. Furthermore, the hypotheses developed will only be testable via quantitative means. Finally, the suitability of the quantitative approach for the present study is confirmed by the literature review presented in Chapters 2; most of the reviewed studies obtained valid and reliable results through adherence to quantitative methods within the positivist paradigm.

3.3 Data Collection

As explained in Chapter 1, the study aims to analyse the potential impact of various factors explaining dividend policy in Chinese listed firms. Therefore, a panel dataset comprising all listed firms that issued A shares on the Shenzhen and Shanghai Exchanges in the Chinese open market covered by the China Stock Markets and Accounting Research (CSMAR) database is created covering the period from 1st January 2008 to 31st December 2016. The dataset is annual and used in the empirical study to examine how the supervisory board, investor sentiment and market liquidity impact the dividend policy of highly concentrated state-controlled listed firms. The data on the security issues obtained from CSMAR are matched using stock codes (Stkcd) for the listed firms. In line with most research, financial firms are excluded from the sample because of the volatility of their data variables, their different capital structure to non-financial firms, and the regulatory factors that affect them (e.g. Baker & Wurgler 2004; DeAngelo, De Angelo, & Stulz 2006; DeAngelo, DeAngelo, & Skinner 2009; Tao, Nan, & Li 2016). Firms without any relevant code or corresponding accounting data are excluded. There were originally 21,824 firm-year observations, but 400 of these from financial companies, banks and insurance firms were excluded because their financial statements are different from those of other industries (He & Yu 2009; DeAngelo, DeAngelo, & Skinner 2009). In addition, 3,012 of the observations have missing information, such as IPOs, net cash flow, operating revenue, etc., so were excluded automatically when running regressions (with STATA). The final sample comprised 18,412 firm-year observations.

Table 3.1 presents the basic annual firm observations in the sample period from 2008 to 2016, with corresponding trends presented in Figure 3.1. Panel A presents the yearly firm observations listed on the main board, small and medium enterprise (SME) board and growth enterprises market (GEM). Panel B presents the firms paying annual cash dividends (payers) and those that did not dividends (nonpayers). The yearly firm observations show an upward trend, no matter whether they relate to the main board, SME or GEM. The number of listed firms on the SME and GEM grew faster than those on the main board. In addition, as the number of listed firms increased every year, firms paying cash dividends increased correspondingly, while the number of nonpayers changed little.

Table 3.1 Number of Yearly-Firm Observation

Panel A

Year	Main Board	SME	GEM
2008	1,184	208	0
2009	1,222	256	0
2010	1,209	349	56
2011	1,256	541	184
2012	1,311	646	292
2013	1,337	680	339
2014	1,289	679	354
2015	1,312	679	394
2016	1,427	751	478

Panel B

Year	Total	Payer	Nonpayer
2008	1,392	726	666
2009	1,478	791	687
2010	1,614	936	678
2011	1,981	1,291	690
2012	2,249	1,594	655
2013	2,356	1,728	628
2014	2,322	1,649	673
2015	2,385	1,622	763
2016	2,656	1,950	706

This table presents the annual observations of the sample firms. The sample period covered 2008 to 2016 and the sample comprises all listed firms that issued A-shares on the Shenzhen and Shanghai Exchanges.Panel A presents the yearly firm observations listed on the main board, small and medium enterprise (SME) board and growth enterprises market (GEM). Panel B presents the firms paying cash dividends (payers) annually and those that did not (nonpayers).

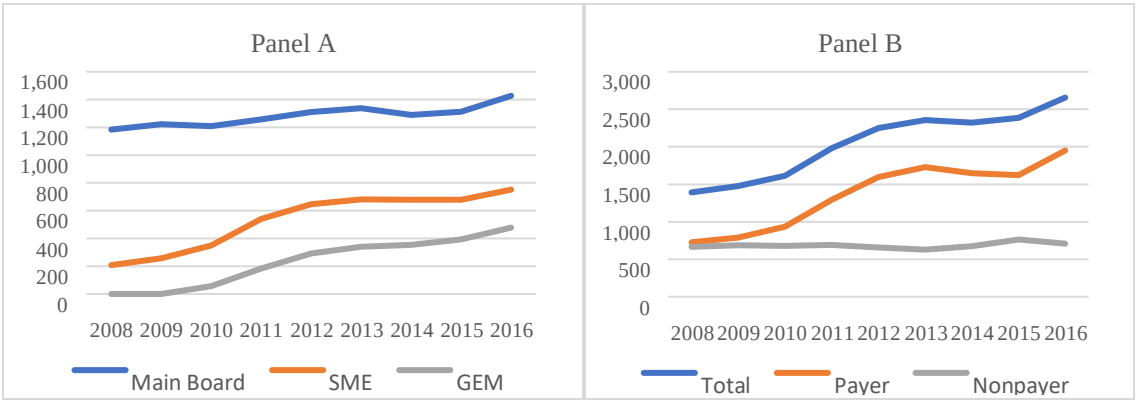

Figure 3.1 Yearly Observation Trends

3.4 Variable Definitions, Hypotheses and Model Specifications

This section describes the variables and the research design used in the study. Variables used are defined including how they are measured when the models are specified. Subsection 3.4.1 gives definitions of the dependent, explanatory and control variables employed to explore the relationship between supervisory boards and dividend payments, and discusses the models used to test the hypotheses related to them. Subsection 3.4.2 defines the dependent, explanatory and control variables employed to examine how investor sentiment impacts dividend payment in concentrated and state-controlled listed firms. The models used for the analysis are also explained. Subsection 3.4.3 explains the variables and models used to test how market liquidity influences dividend payment for concentrated and state-controlled listed firms.

3.4.1 Supervisory Board and Dividend Policy

A distinction is drawn between the dependent, explanatory and control variables that examine the relationship between the supervisory board and dividend payment, the empirical analysis for which is conducted in Chapter 4. Here, econometric models are

specified for the hypothesis testing, including logit and OLS regressions. In addition, probit and tobit models are used as alternative models for robustness checking.

3.4.1.1 Dependent Variables

As our research focuses on cash dividend payments, whether firms pay these and at what level are the main questions posed. As a result, the variables which are used to measure the decisions on and changes to cash dividend payment are described below.

i. Dividend Decision: $Payer_{it}$

$Payer_{it}$ is a dummy variable used to measure whether a firm decided to pay cash dividends. Thus $Payer_{it}$ equals 1 when the firm did decide to pay these at year *t*, while $payer_{it}$ equals 0 when firms are nonpayers (Baker & Wurgler 2004; Li & Lie 2006).

ii. Dividend Level: $Dividend_{it}$

$Dividend_{it}$ is defined as the level of cash dividend payment, measured as the number of cash dividends divided by the book value of assets at year *t* (Li & Lie 2006, Ab Razak, Ahmad, & Aliahmed 2008; Tran, Alphones, & Nguyen 2017). It is defined accordingly as:

$$Dividend_{it} = \frac{CD_{it}}{A_{it}}$$

where:

CD_{it} *is the amount of cash dividend of firm i at year t*

A_{it} *is the book value of the total asset of firm i at year t*

iii. Changes in Dividend: ΔD_{it}

$\underline{\Delta D_{it}}$ is defined as changes in dividends, either increasing or decreasing amounts. This variable is measured by dividend change (DC_{it}). DC_{it} is calculated by the change in cash dividend payments from year *t-1* to year *t*, divided by the net income of year *t* (DeAngelo, De Angelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007). It is defined accordingly as:

$$\Delta D_{it} = \frac{CD_{it} - CD_{it-1}}{NI_{it}}$$

where:

CD_{it} *is the amount of cash dividend of firm i at year t*

CD_{it-1} *is the amount of cash dividend of firm i at year t-1*

NI_{it} *is the net income of firm i at year t*

3.1.1.1 Explanatory Variables

In chapter 4, the study aims to examine how the supervisory board affects a firm's cash dividend payments in the Chinese two-tier system. The related board factors (independent variables) are described below.

i. The Size of the Supervisory Board ($Supsize_{it}$)

$\underline{Supsize_{it}}$ is the number of supervisors. It is proposed that this influences dividend payments. Previous research has found evidence that board size influences the effectiveness of governance and determines dividend payments decisions; a larger board size influences dividend payments negatively because of the lower monitoring and responsibility, and the question of information asymmetry (Lipton & Lorsch 1992;

Yermack 1996; Eisenberg, Sundgren, & Wells 1998; Dalton et al. 1999; Wu 2004; Guest 2009; Lublin 2014).

ii. The Ratio of Emolument received by the Supervisory Board ($Supaid_{it}$)

$Supaid_{it}$ is measured by the percentage of supervisors who are given emoluments. Previous research has discovered that management emolument influences dividend policy and corporate decisions in a positive way (Lambert, Lanen, & Larcker 1989; Mehran 1992; White 1996; Berger, Ofek, & Yermack 1997; Fenn and Liang 2001; Kang, Kumar, & Lee 2006). Since the emolument-receiving management can positively affect dividend payment, a supervisory board receiving higher emoluments could also influence cash dividend policy positively.

iii. The Ratio of Employee Representation on the Supervisory Board ($Employeep_{it}$)

$Employeep_{it}$ is measured as the percentage of supervisors who are also employees. In a two-tier system, the supervisory board is required to include employee representatives for better monitoring and to represent stakeholders' benefits. Some previous research has proposed that employee representation on the supervisory board could influence a company's governance and payout policy positively (Benelli, Loderer, & Lys 1987; La Porta et al. 2002; Faccio, Lang, & Young 2001; Gorton and Schmid 2004; Fauver and Fuerst 2006).

iv. The Total Shareholding Ratio of Supervisors ($Supsharep_{it}$)

$Supsharep_{it}$ is measured as the number of shares held by supervisors divided by the total number of shares. Previous research has found that shareholders affect payout policy for personal benefit (Shleifer & Vishny 1986; Lambert, Lanen, & Larcker 1989;

Jolls 1998; Allen, Bernardo, & Welch 2000; Weisbenner 2000; Fenn & Liang 2001; Kahle 2002; Short, Zhang, & Keasey 2002; Blouin, Raedy, & Shackelford 2004; Brown, Liang, & Weisbenner 2007). Therefore, supervisory board shareholders could positively affect dividend payment for personal benefit. It is calculated as follows:

$$\text{Supsharep}_{\text{it}} = \frac{SBShare_{it}}{TShare_{it}}$$

where:

$SBShare_{it}$ *is the number of shares held by supervisors of firm i at year t*

$TShare_{it}$ *is the total number of shares*

v. The Dependent Director Representative Ratio of the Supervisory Board ($Directorp_{it}$)

$\underline{\text{Directorp}_{\text{it}}}$ is measured by the percentage of supervisors who have a close working relationship with the board of directors, such as the chairman, secretary and the chairman's assistant. The independence of boards has been proven to influence enhanced governance and shareholder benefits. Many researchers have found that independent or dependent board members reduce shareholder interests, board functions and dividend policy (Adams & Feirrera 2007; Grinstein & Tolkowsky 2004; Adams & Ferreira 2007; Linck, Netter, & Yang 2008; Lehn, Patro, & Zhao 2009; Adams, Hermalin, & Weishach 2010; Armstrong, Guay, & Weber 2010; Duchin, Matsusaka, & Ozbas 2010).

3.1.1.2 Control Variables

In addition to the main explanatory variables representing the supervisory board that affects dividend payment, the study incorporates a number of additional variables that could have a partial effect on cash dividend payment, such as the board of directors (Eisenberg, Sundgren, & Well 1998; Guest 2009; Lublin 2014); management (Fenn & Liang 2001; Kahle 2002; Brown, Liang, & Weisbenner 2007); firm characteristics (DeAngelo, DeAngelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007; Ahmed & Javid 2008; Iturriaga & Crisóstomo 2010); ownership type and structure (Gugler 2003; Lin, Chiou, & Chen 2010; Lin, Chen, & Tsai 2017); and relevant policy (Tao, Nan, & Li 2016). As a result, we control for the following variables:

i. Size of the Board of Directors ($Bsize_{it}$)

$\underline{Bsize_{it}}$ is measured as the number of members of the board of directors in the management board. This has been proved to influence corporate performance (Yermack 1996; Eisenberg, Sundgren, & Well 1998; Mak & Li 2001; Belkhir 2009); dividend policy (Eisenberg, Sundgren, & Well 1998; Guest 2009; Lublin 2014); and corporate governance (Hermalin & Weisbach 1988; Dalton et al. 1999; Agrawal & Knoeber 2001; Fich 2005). Smaller board size has been found to better monitor and control management because of agency problems (Eisenberg, Sundgren, & Well 1998; Guest 2009; Lublin 2014). On the other hand, some studies posit that a larger board impacts firms' decisions and dividend payments positively because it contains more outsider representation, who have more experience, knowledge and ability to provide better advice, which works better for a large complex company (Hermalin & Weisbach 1988; Dalton et al. 1999; Agrawal & Knoeber 2001; Fich 2005).

ii. The Shareholding Ratio of the Board of Directors ($Bshareop_{it}$)

$Bshareop_{it}$ is calculated by the number of shares held by the board of directors divided by the total number of shares. Extensive research has proven that insider shareholders influence dividend policy positively for personal wealth (Shleifer & Vishny 1986; Allen, Bernardo, & Welch 2000; Short, Zhang, & Keasey 2002; Blouin, Raedy, & Shackelford 2004; Hu & Kumar 2004; Truong & Heaney 2007; Brown, Liang, & Weisbenner 2007). It is calculated as follows:

$$Bshareop_{it} = \frac{BShare_{it}}{TShare_{it}}$$

where:

$BShare_{it}$ is the number of shares held by the board of directors of firm i at year t

$TShare_{it}$ is the total number of shares

iii. Independent Director Percentage ($Indep_{it}$)

$Indep_{it}$ is measured by the percentage of independent directors on the board. This type of director has been suggested to influence board decisions and shareholder benefits (Burns 2004; Grinstein & Tolkowsky 2004; Luchetti & Lublin 2004; Adams & Feirrera 2007). Consequently, independent directors can influence dividend policy. Previous research suggests that the independent members on the board of directors influence dividend payment positively. More independent directors on the board help to better oversee management and represent for stockholder interests (Brudney, 1982; Adams & Ferreira 2007; Linck, Netter, & Yang 2008; Lehn, Patro, & Zhao 2009; Alias et al. 2012).

iv. The Executive Shareholding Ratio ($Exeshareop_{it}$)

$Exeshareop_{it}$ is calculated by the number of shares held by executives divided by the total number of shares. Previous research has confirmed that executives or managers who hold a large number of shares impact dividend policy because of personal financial incentives and benefits (Lambert, Lanen, & Larcker 1989; Jolls 1998; Weisbenner 2000; Fenn & Liang 2001; Kahle 2002; Brown, Liang, & Weisbenner 2007). It is described as follows:

$$Exeshareop_{it} = \frac{ExeShare_{it}}{TShare_{it}}$$

where:

$ExeShare_{it}$ is the number of shares held by the management of firm i at year t

$TShare_{it}$ is the total number of shares

v. SOE ($TopSOE_{it}$)

$TopSOE_{it}$ is a dummy variable to measure whether the listed firms is state-owned or not. It equals 1 when the company is controlled by the state; otherwise, 0. Many researchers have studied the correlation between state-owned shareholders and firm performance and dividend policy, especially in the Chinese market (Dewenter & Malatesta 2001; Gugler 2003; Lin, Chiou, & Chen 2010; Lin, Chen, & Tsai 2017). It is known that different types of ownership have different impacts on dividend policy because of the agency problem and personal interest. State-owned shareholders are willing to keep stable dividend payments and are reluctant to cut dividends (Gugler 2003; Lin, Chiou, & Chen 2010).

vi. The Degree of Concentration of the Largest Shareholder ($Top1op_{it}$)

$\underline{Top1op_{it}}$ is calculated by the number of shares held by the largest shareholder divided by the total number of shares. The largest shareholder has been proven to significantly impact or even control corporate performance and dividend policy for personal wealth (Asquith & Mullins Jr. 1983; Shleifer & Vishny 1986; Jun 2006; Truong & Heaney 2007). It is described as follows:

$$Top1op_{it} = \frac{TopShare_{it}}{TShare_{it}}$$

where:

$TopShare_{it}$ is the number of shares held by the largest shareholder of firm i at year t

$TShare_{it}$ is the total number of shares

vii. Indicator of Lifecycle: Firm Size (InA_{it})

$\underline{InA_{it}}$ is measured as the natural log of book value of total assets, which is the sum of all asset items (Rajan and Zingale 1995; Dong, Hirshleifer, & Teoh 2012). The reason for scaling with the natural logarithm is to avoid the bias associated with outliers and errors. Residuals become bigger when the value of the dependent variable is bigger, which is anomalous and inevitable. The natural logarithm of a variable helps to neutralize the residuals to obtain a larger value for it. In addition, using logarithm values to control the difference in size between small and large firms can eliminate the potential skewness associated with large values to neutralize firm size. This factor is one of the basic measures of company maturity. When it has been verified that it affects dividend payment, the conclusion will be that a mature firm which is larger, more

profitable and has fewer growth opportunities prefers to pay dividends (DeAngelo, DeAngelo, & Stulz 2006). This conclusion also supports the dividend lifecycle theory (DeAngelo, DeAngelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007; Denis & Osobov 2008). The indicator is described as follows:

$$InA_{it} = LogTA_{it}$$

where:

$LogTA_{it}$ is the natural log of the book value of total assets

viii. Indicator of Lifecycle: Firm Profitability (ROA_{it})

ROA_{it} is measured as a firm's return on assets. This return refers the operating profits and total assets are the sum of all asset items. Firm profitability is another factor that measures company maturity. Profitable firms have high levels of internal funds to pay cash dividends, in addition to future investment, which is suggested by lifecycle theory (DeAngelo, DeAngelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007; Denis & Osobov 2008). It is indicated as follows:

$$ROA_{it} = \frac{R_{it}}{A_{it}}$$

where:

R_{it} is a firm's return measured as operating profits

A_{it} is the book value of the total assets of firm i at year t

ix. Indicator of Lifecycle: Growth of The Firm (ΔREV_{it})

$\underline{\Delta REV_{it}}$ is measured as a firm's change in operating revenue from year *t-1* to *t* divided by revenue in year *t-1*. Operating revenue is defined as revenue recognised by the company, apart from interest income, net earned premiums, commissions and fees. As the lifecycle theory suggests, a mature firm that is larger, more profitable and has fewer growth opportunities prefers to pay dividends (DeAngelo, DeAngelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007; Denis & Osobov 2008). The growth of a firm can measure company maturity. A lower growth indicator means that the company has a high degree of maturity, fewer growth opportunities and spends more free cash flow on paying dividends than developing and investing in products. This indicator is calculated as follows:

$$\Delta REV_{it} = \frac{OREV_{it-1} - OREV_{it}}{OREV_{it-1}}$$

where:

$OREV_{it-1}$ *is the operating revenue measured as revenue minus interest income, net earned premiums and commissions, and fee income of firm i at year t-1*

$OREV_{it}$ *is the operating revenue measured as revenue minus interest income, net earned premiums and commissions, and fee income of firm i at year t*

x. Indicator of Lifecycle: R&D Investment ($R\&D_{it}$)

$\underline{R\&D_{it}}$ is measured as the amount of research and development investment divided by operating revenue. As part of a firm's future investment, higher R&D investment means that the company has good growth prospects, which could influence the cash dividend negatively (Fama & French 2001; Gugler 2003). For small young firms that lack

internal funds, the cost of R&D investment reduces the internal cash flows used for stock issues and dividend payments (Brown, Fazzari, & Petersen 2007). It is calculated as follows:

$$R\&D_{it} = \frac{RDI_{it}}{OREV_{it}}$$

where:

RDI_{it} is the amount of research and development investment of firm i

$OREV_{it}$ is the operating revenue measured as revenue minus interest income, net earned premiums, and commission and fee income

xi. *Indicator of Catering and Investor Sentiment: Dividend Premium (P_{it-1}^{D-ND})*

$\underline{P_{it-1}^{D-ND}}$, the equal-weighted market dividend premium, as proposed and defined by Baker and Wurgler (2004), is the difference between the natural logs of the dividend payers' and nonpayer's average market-to-book ratio each year, and is also called the log of the ratio of average market-to-book. "Market-to-book" is defined following Fama and French (2001). The market-to-book ratio is book assets minus book equity plus market equity, all divided by book assets. It is used to measure the propensity to pay dividends and has been verified as having a positive impact on the propensity to pay dividends as well as changes in paying dividends. This conclusion also supports the dividend catering theory (Baker & Wurgler 2004; Li & Lie 2006; Ferris, Jayaraman, & Sabherwal 2009).

xii. Indicator of Investor Sentiment: Trading Volume ($STurn_{it-1}$)

$\underline{\text{STurn}_{\text{it}-1}}$ is measured as the detrended log of turnover ratio and calculated as the ratio of annual reported share volume to shares listed by CSMAR (Baker & Wurgler 2006; Ding et al. 2017). Previous research has used this variable as a sentiment index based on the NYSE database and found that high share turnover means high market liquidity and low market returns, which is a symptom of investors' optimism or overvaluation (Jones 2001; Baker & Stein 2004; Baker & Wurgler 2006). The proxy is described as follows:

$$STurn_{it-1} = \frac{SVol_{it-1}}{SN_{it-1}}$$

where:

$SVol_{it-1}$ is the annual reported share volume at year t-1

SN_{it-1} is the number of shares listed by CSMAR at year t-1

xiii. Leverage (D/E_{it})

$\underline{\text{D/E}_{\text{it}}}$ is measured as a firm's debt-to-equity ratio, which indicates the relative proportion of equity and debt of financing a firm's assets, and which is calculated by total liabilities divided by total shareholder equity. Total liabilities are defined as the sum of all liability items, and total shareholder equity is the sum of all shareholders' equity items. This variable is also known as risk, which has been proved to influence dividend policy. Previous research has indicated that there is a significantly negative relationship between leverage and dividend payment, which means that firms with higher leverage and level of risk pay lower dividends (Collins, Saxena, & Wansley 1996; D'souza & Saxena 1999; Baker, Veit, & Powell 2001; Mahadwartha 2003; Jiraporn &

Ning 2006; Ahmed & Javid 2008; Iturriaga & Crisóstomo 2010). Leverage is measured as follows:

$$D/E_{it} = \frac{Liab_{it}}{SE_{it}}$$

where:

$Liab_{it}$ *is the total liabilities of firm i*

SE_{it} *is the total shareholder equity of firm i*

xiv. Net Cash Flow (CF_{it})

$\underline{CF_{it}}$ is measured as a ratio calculated by the difference between cash inflow from operating activities and cash outflow from operating activities, divided by total assets. Net cash flow influences corporate investment and dividend payment (Lang & Litzenberger 1989; Vogt 1994). It is an important determinant of the dividend payout ratio and reflects the ability of a firm to pay dividends (Alli, Khan, & Ramirez 1993; Amidu & Abor 2006; Gill, Bigger, & Tibrewala 2010). Much previous research includes this factor as a control variable in the study of dividend policy and has demonstrated a positive relationship between cash flow and dividend payment (Faccio, Lang, & Young 2001; Fenn & Liang 2001; Carpenter & Sanders 2002; Gugler & Yurtoglu 2003; Amidu & Abor 2006; DeAngelo, DeAngelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007). Net cash flow is defined as follows:

$$CF_{it} = \frac{NCF_{it}}{TA_{it}}$$

where:

NCF_{it} is the net cash flow from operating activities, measured as the difference between cash inflow and cash outflow

TA_{it} is the book value of total assets

xv. Semi-mandatory Dividend Policy (SEO_{it})

$\underline{SEO_{it}}$ is a measure which is a dummy variable, equal to 1 when semi-mandatory dividend policy is applied, and 0 otherwise. This variable is measured by whether a firm conducts seasoned equity offerings (SEO) in a particular year (Tao, Nan, & Li 2016). According to the China Securities Regulatory Commission (CSRC), listed companies must continually pay a certain level of dividend as a prerequisite for their refinancing qualifications for at least three years before they can undertake SEOs. This indicates the SEO firms must adhere to the semi-mandatory dividend policy. As a result, we assume that when firms make SEOs, SEO_{it} equals 1 in the same year *t* and the previous two continuous years *t-1* and *t-2*, and equals 0 for the remaining years of the SEO firms and all years of the non-SEO firms.

3.1.1.3 Hypotheses, Model Specification and Estimation

Given the number of explanatory representing the supervisory board, several hypotheses can be postulated, and an appropriate econometric model can be used to test the relationship between the supervisory board and dividend policy. Drawing upon previous studies in the literature, the first set of hypotheses relate supervisory board characteristics to the propensity to pay cash dividends, which leads to the postulation of the following five testable sub-hypotheses:

H4.1a: Supervisory board size affects the propensity to pay dividends

H4.2a: Emolument-receiving members on supervisory boards affect the propensity to pay dividends

H4.3a: Employee representatives on a supervisory board do not significantly affect the propensity to pay dividends

H4.4a: Higher supervisory board shareholding positively affects the propensity to pay dividends

H4.5a: The dependent director representatives of the supervisory board have a significant effect on the propensity to pay dividends.

These hypotheses, the rationale for which is discussed in Chapter 4, indicate that the probability or likelihood of firms paying cash dividends is influenced by a set of factors characterizing the supervisory board alongside other relevant firm characteristics. Hence, a logit model is appropriate to test the hypotheses. Logit models are widely used as a type of generalized linear model to estimate the functional relationship between dependent and independent variables when the dependent variable is binary, characterizing the decision to pay or not. For a binary dependent variable, the logistic regression model is appropriate and its parameters can be estimated efficiently under maximum likelihood estimation (MLE), while the logistic model can restrict the predicted probability within the range of 1 and 0. MLE is a method to estimate the parameters of a probability distribution by maximizing the likelihood function, which aims to make inferences about the population that is most likely to generate the sample, especially when the joint probability distribution of random variables is not necessarily

independent and identically distributed (Myung 2003). A logistic model also corrects for heteroscedasticity that invalidates the statistical tests of significance. Heteroscedasticity exists because the subpopulations of a collection of random variables have different variabilities (Cox 1970; Tennant 1977; Silvapulle 1981; Scott & Wild 1991). Many researchers, such as Baker and Wurgler (2004), Li and Lie (2006), and Denis and Osobov (2008) have applied logit models in their studies of explanatory factors linking to the propensity to pay dividends. Therefore, an appropriate logit model to empirically test the above hypotheses is specified as follows:

$$Logit(Payer_{it} = 1) = \alpha_0 + \sum_{n=1}^{m=5} \beta_n X_{itn} + \sum_{k=6}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \qquad (4.1)$$

where:

α_0 *is the constant term*

$\sum_{n=1}^{m=5} \beta_n X_{itn}$ *is the set of the main explanatory variables representing supervisory board namely: the size of the supervisory board (*$Supsize_{it}$*; the emolument payment ratio of the supervisory board (*$Supaid_{it}$*); the ratio of employee representation on the supervisory board (*$Employeep_{it}$*); the total shareholding ratio of supervisors (*$Supsharep_{it}$*); and supervisory board independence (*$Directorp_{it}$*);*

$\sum_{k=6}^{n} \beta_k Controls_{itk}$ *is the set of control variables: the size of the BoD (*$Bsize_{it}$*); the shareholding ratio of the board of directors (*$Bshareop_{it}$*); independent director percentage (*$Indep_{it}$*); dummy SOE (*$TopSOE_{it}$*); the shareholding ratio of the largest shareholder (*$Top1op_{it}$*); firm size (*InA_{it}*); firm profitability (*ROA_{it}*); firm growth (*ΔREV_{it}*); leverage (*D/E_{it}*); net cash flow (*CF_{it}*); R&D investment (*$R\&D_{it}$*); stock*

market turnover ($STurn_{it-1}$); dividend premium (P_{it-1}^{D-ND}); and semi-mandatory dividend policy (SEO_{it}).

As an alternative to the logit model, a probit model could be used to check the consistency of the test results relating to hypotheses H4.1a, H4.2a, H4.3a, H4.4a, and H4.5a. The difference between these two models is theoretical; the logistic regression model uses a logit link function, which assumes that the dependent variables have only two categories, 0 or 1, and uses the natural log of the odds that dependent variables equal one of the categories, while probit regression uses an inverse normal link function (Liao 1994). However, both probit and logit models are types of generalized linear models that estimate the functional relationship between dependent and independent variables, which is appropriate for a dichotomous dependent variable and corrects for heteroscedastic errors (Silvapulle 1981; Scott & Wild 1991). As a result, probit models can be used in exactly the same situations as logit models.

Apart from influencing the decision to pay dividends, the literature also indicates that supervisory board characteristics may affect the amount of dividend. Accordingly, the second set of hypotheses tests the relationship between the level of dividend payment and the supervisory board characteristics. Similar to the previous set, the testable hypotheses are given below:

H4.1b: Supervisory board size affects the level of cash dividends

H4.2b: Emolument-receiving members on supervisory boards affect the level of cash dividends

H4.3b: Employee representatives on a supervisory board do not significantly affect the level of cash dividends

H4.4b: Higher supervisory board shareholding positively affects the level of cash dividends

H4.5b: The dependent director representatives of the supervisory board have a significant effect on the level of cash dividends

Ordinary least squares (OLS) estimation can be used to test the above hypotheses. OLS is widely used as a type of linear least squares method to estimate the unknown parameters in a linear regression model by minimizing the sum of squared residuals, where the residual for each observation is the difference between the actual and fitted value. Geometrically, the smaller the sum of the squared residuals, parallel to the axis of the dependent variable, and between each data point in the set and the corresponding point on the regression surface, the better the model fits the data (Pavelescu 2004). Previous research has extensively applied the OLS model linking dividend pay to a range of explanatory factors (Baker and Wurgler 2004; Li and Lie 2006). To empirically test the above hypotheses using OLS estimation, the model is specified as follows:

$$Dividend_{it} = \alpha_0 + \sum_{n=1}^{m=5} \beta_n X_{itn} + \sum_{k=6}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \qquad (4.2)$$

where:

α_0 *is the constant term*

$\sum_{n=1}^{m=5} \beta_n X_{itn}$ *is a set of main explanatory variables representing supervisory board characteristics, namely: the size of the supervisory board (*$Supsize_{it}$*); the emolument payment ratio of the supervisory board (* $Supaid_{it}$ *); the ratio of employee*

representation on the supervisory board ($Employeep_{it}$); the total shareholding ratio of supervisors ($Supsharep_{it}$); supervisory board independence ($Directorp_{it}$).

$\sum_{k=6}^{n} \beta_k Controls_{itk}$ *is the set of control variables: the size of the BoD ($Bsize_{it}$); the shareholding ratio of the board of directors ($Bshareop_{it}$); independent director percentage ($Indep_{it}$); dummy SOE ($TopSOE_{it}$); the shareholding ratio of the largest shareholder ($Top1op_{it}$); firm size (InA_{it}); firm profitability (ROA_{it}); firm growth (ΔREV_{it}); leverage (D/E_{it}); net cash flow (CF_{it}); R&D investment ($R\&D_{it}$); stock market turnover ($STurn_{it-1}$); dividend premium (P_{it-1}^{D-ND}); and semi-mandatory dividend policy (SEO_{it}).*

An alternative to OLS estimation of the above model is a tobit model. Also called a censored regression model, the tobit model estimates the linear relationship between variables when the dependent variable is censored in some way (Tobin 1958; Amemiya 1984). Compared to the tobit model, the use of OLS regression has a limitation in that it provides inconsistent estimates of the parameters when the dependent variable is censored, which means the coefficient estimates of the model do not necessarily approach the true population of parameters when the sample size increases asymptotically (Long 1997). Since dividend payments are positive (hence truncated at zero), tobit estimation is used to check for the consistency of results in the empirical analysis.

Finally, it is of interest to test whether supervisory board characteristics influence the change in dividend payments. Thus, as a third set of hypotheses, the following testable hypotheses are proposed:

H4.1c: Supervisory board size is associated with changes on dividend payments

H4.2c: Emolument-receiving members on supervisory boards are associated with changes on dividend payments

H4.3c: Employee representatives on a supervisory board are not associated with changes on dividend payments

H4.4c: Higher supervisory board shareholding is associated with increases in dividend payments

H4.5c: The dependent director representatives of the supervisory board have a significant effect on changes of dividend payments.

Many researchers have applied OLS estimation in their studies to link explanatory factors to changes to dividend payments (DeAngelo, DeAngelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007). Thus, OLS estimation is used to empirically test the above hypotheses in the specification of the model as follows:

$$\Delta D_{it} = \alpha_0 + \sum_{n=1}^{m=5} \beta_n X_{itn} + \sum_{k=6}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \qquad (4.3)$$

where:

α_0 *is the constant term*

$\sum_{n=1}^{m=5} \beta_n X_{itn}$ *is the set of main supervisory board variables: the size of the supervisory board (*$Supsize_{it}$*); the emolument payment ratio of the supervisory board (*$Supaid_{it}$*); the ratio of employee representation on the supervisory board (*$Employeep_{it}$*); the total shareholding ratio of supervisors (*$Supsharep_{it}$*); and supervisory board independence (*$Directorp_{it}$*)*

$\sum_{k=6}^{n} \beta_k Controls_{itk}$ *is the set of control variables: the size of the BoD (*$Bsize_{it}$*); the shareholding ratio of the board of directors (*$Bshareop_{it}$*); independent director percentage (*$Indep_{it}$*); dummy SOE (*$TopSOE_{it}$*); the shareholding ratio of the largest shareholder (*$Top1op_{it}$*); firm size (*InA_{it}*); firm profitability (*ROA_{it}*); firm growth (*ΔREV_{it}*); leverage (*D/E_{it}*); net cash flow (*CF_{it}*); R&D investment (*$R\&D_{it}$*); stock market turnover (*$STurn_{it-1}$*); dividend premium (*P_{it-1}^{D-ND}*); and semi-mandatory dividend policy (*SEO_{it}*).*

Alternatively, tobit estimation is used as a consistency check assuming that increases in dividends are always positive in the sample period.

3.1.2 Investor Sentiment, Ownership and Dividend Policy

The next set of hypotheses proposes the relationship between investor sentiment, ownership (highly concentrated state ownership) and dividend payment. In this section, the dependent variables dividend decision ($\mathrm{Payer_{it}}$) and Changes in Dividend ($\Delta \mathrm{D_{it}}$) are as same as those in Chapter 4. Most of the control variables are the same as those controlled for in testing the relationship between the supervisory board and dividend policy in Chapter 4, which are: the size of the BoD ($\mathrm{Bsize_{it}}$); the shareholding ratio of the board of directors ($\mathrm{Bshareop_{it}}$); independent director percentage ($\mathrm{Indep_{it}}$); firm size ($\mathrm{InA_{it}}$); firm profitability ($\mathrm{ROA_{it}}$); firm growth ($\Delta \mathrm{REV_{it}}$); leverage ($\mathrm{D/E_{it}}$); net cash flow ($\mathrm{CF_{it}}$); R&D investment ($\mathrm{R\&D_{it}}$); and semi-mandatory dividend policy ($\mathrm{SEO_{it}}$). Two additional control variables which are relevant to the supervisory board, the size of the supervisory board ($\mathrm{Supsize_{it}}$) and the total shareholding ratio of

supervisors (Supsharep_{it}), are added and described in section 3.4.1. Only the explanatory variables are described below.

3.1.2.1 Explanatory Variables

As the study aims to examine the association between investor sentiment, ownership (highly concentrated state ownership) and dividend policy, the proxies used to measure the index of investor sentiment are discussed, together with the variables representing the characteristics of the largest shareholders, as described below.

i. Investor Sentiment Index ($Sentiment_{it}$)

Investor sentiment is defined broadly as a general mood among investors regarding a particular market or asset. Previous research has confirmed how investor sentiment influences dividend policy. Some studies suggest a positive relationship between investor sentiment and dividend payment consisting with the reference of the catering theory, while others propose that there is a negative relationship, as confirmed by signalling theory (Frankfurter & Wood 2002; Baker & Wurgler 2004; Ferris, Sen, & Yui 2006).

There are many proxies related to sentiment and used to describe investor sentiment, such as investor mood, closed-end fund discount, share turnover, and first-day returns on IPOs (Baker & Stein 2004; Baker & Wurgler 2007). In Baker & Wurgler's (2007) study, variables such as the closed-end fund discount, trading volume, the number and first-day returns on IPOs, the equity share in new issues, and dividend premium are contained to form the investor sentiment index. We follow the method proposed by

Baker & Wurgler (2006) to develop an index of investor sentiment applicable to the context of the Chinese stock market. To do this, we only use five of the six proxies: trading volume, the number and first-day returns on IPOs, the equity share in new issues, and dividend premium; as data on closed-end fund discounts are unavailable. In addition, we adjust the measurements of the proxies in line with other studies (e.g. Ning 2009; Zhu & Niu 2016; Ding et al. 2017), which develop the sentiment index construction method based on the Chinese stock market data to reflect China's stock market investor sentiment more accurately. To do so, it is sensible to describe each of the proxies individually as below.

Trading Volume. Trading volume, also the market turnover ($\mathrm{STurn}_{\mathrm{it}-1}$), is measured as the detrended log of turnover ratio and calculated as the ratio of annual reported share volume to shares listed by CSMAR (Baker & Wurgler 2006; Ding et al. 2017). Previous research has used this variable as a sentiment index based on the NYSE database and found that high share turnover means high market liquidity and low market returns, which is a symptom of investors' optimism or overvaluation (Jones 2001; Baker & Stein 2004; Baker & Wurgler 2006).

IPO Market: IPO Volume. IPO volume is presented by IPO number ($\mathrm{IPON}_{\mathrm{it}}$), the natural log of annual IPO volume. The reason for scaling with the natural logarithm is to avoid the bias associated with outliers and errors, as the value of this variable is large. The underlying demand for IPOs is considered to be extremely sensitive to investor sentiment. IPOs' capriciously open and close could explain the fluctuations of IPO volume, implying the sentiment of investors (Baker & Wurgler 2006; Ding et al 2017).

IPO Market: First-day Returns On IPOs. The first-day returns on IPOs ($IPOR_{it-1}$), representing the IPO market, are investigated and viewed as an index of investor sentiment. They are calculated as the detrended log of average annual first-day returns on IPOs. High first-day returns on IPOs are cited as a measure of investor enthusiasm, while a low idiosyncratic return is interpreted as a symptom of market timing (Ljungqvist, Nanda, & Singh 2006; Baker & Wurgler 2006).

Equity Share in New Issues. The equity share in the new issues (ES_{it}) is also a measure of financing activity and can capture the sentiment. It is the ratio of equity issuance to the total of equity and long-term debt issuances (Baker & Wurger 2000, 2006). Previous research has proven that high values of equity portend low stock market returns (Baker & Wurgler 2000; Yu & Yuan 2011).

Dividend Premium. Dividend premium (P_{it-1}^{D-ND}), the equal-weighted market dividend premium, as proposed and defined by Baker and Wurgler (2004), is the difference between the natural logs of the dividend payers' and nonpayer's average market-to-book ratio each year, and is also called the log of the ratio of average market-to-book. "Market-to-book" is defined following Fama and French (2001). The market-to-book ratio is book assets minus book equity plus market equity, all divided by book assets. It is used to measure the propensity to pay dividends and has been verified as having a positive impact on the propensity to pay dividends as well as changes in paying dividends. This conclusion also supports the dividend catering theory (Baker & Wurgler 2004; Li & Lie 2006; Ferris, Jayaraman, & Sabherwal 2009).

Using these five proxies, a composite index is derived to capture their common components, with each proxy first standardised (Baker & Wurgler 2007; Zhu & Niu 2016; Ding et al. 2017). We used principal component analysis (PCA) to construct the investor sentiment index and define it as the first principal component of the correlation matrix of the five variables. The first principal component explains 53% of the sample variance, which indicates that each factor captures much of the common variation. Finally, investor sentiment presents as below:

$$Sentiment_{it} = 0.5784STurn_{it-1} + 0.3845IPON_{it} + 0.5372IPOR_{it-1} + 0.3029ES_{it} + 0.3706P_{it-1}^{D-ND}$$

$STurn_{it-1}$ is the market turnover; $IPON_{it}$ is IPO number; $IPOR_{it-1}$ is the first-day return on IPOs; ES_{it} is the equity issue over total new issues and P_{it-1}^{D-ND} is dividend premium.

In addition, as each proxy can represent investor sentiment, the above variables, share turnover ($\mathrm{STurn_{it-1}}$), IPO number ($\mathrm{IPON_{it}}$), the first-day returns on IPOs ($\mathrm{IPOR_{it-1}}$), the equity share ratio ($\mathrm{ES_{it}}$) and dividend premium ($\mathrm{P_{it-1}^{D-ND}}$), can be used separately by conducting a robustness test to verify how they exactly affect dividend payment (Neal & Wheatley 1998; Baker & Wurgler 2000; Baker & Stein 2004; Ljungqvist, Nanda, & Singh 2006).

ii. SOE ($TopSOE_{it}$)

$\mathrm{TopSOE_{it}}$ is a dummy variable to measure whether the listed firms is state-owned or not. It equals 1 when the company is controlled by the state; otherwise, 0. Many

researchers have studied the correlation between state-owned shareholders and firm performance and dividend policy, especially in the Chinese market (Dewenter & Malatesta 2001; Gugler 2003; Lin, Chiou, & Chen 2010; Lin, Chen, & Tsai 2017). It is known that different types of ownership have different impacts on dividend policy because of the agency problem and personal interest. State-owned shareholders are willing to keep stable dividend payments and are reluctant to cut dividends (Gugler 2003; Lin, Chiou, & Chen 2010).

iii. The Degree of Concentration of The Largest Shareholder ($Top1op_{it}$)

$\underline{\mathrm{Top1op_{it}}}$ is calculated by the number of shares held by the largest shareholder divided by the total number of shares. The largest shareholder has been proven to significantly impact or even control corporate performance and dividend policy for personal wealth (Asquith & Mullins Jr. 1983; Shleifer & Vishny 1986; Jun 2006; Truong & Heaney 2007). It is described as follows:

$$Top1op_{it} = \frac{TopShare_{it}}{TShare_{it}}$$

where:

$TopShare_{it}$ is the number of shares held by the largest shareholder of firm i at year t

$TShare_{it}$ is the total number of shares

Using the above explanatory variables, the hypotheses that corporate ownership and investor sentiment affect dividend policy can be tested using interaction terms of the ownership and investor sentiment measures, as explained further below.

3.1.2.2 Hypotheses, Model Specification and Estimation

This section describes an econometric model used to test the relationship between investor sentiment, ownership (highly concentrated and state ownership) and dividend policy. The testable hypotheses proposed are as follows:

H5.1a: The propensity of SOEs to pay cash dividends is affected by investor sentiment

H5.2a: The propensity of firms with large shareholder concentration to pay cash dividend is affected by investor sentiment

The rationale for these and other hypotheses proposed in this section is discussed in Chapter 5. Following Baker and Wurgler (2004), Li and Lie (2006), Denis and Osobov (2008) and others, a logit model can be used to test the above hypotheses which involve a binary dependent variable. An appropriate logit regression model for the above hypotheses is as follows:

$$Logit(Payer_{it} = 1) = \alpha_0 + X_{it} + X'_{it} + X\_X'_{it} + \sum_{k=4}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \quad (5.1)$$

where:

α_0 *is the constant term*

X_{it} *is the index variable of investor sentiment* ($Sentiment_{it}$)

X'_{it} *is the variable of ownership: state ownership* ($TopSOE_{it}$) *or the shareholding ratio of the largest shareholder* ($Top1op_{it}$)

$X\_X'_{it}$ *is the interaction term between the index variable of investor sentiment* ($Sentiment_{it}$) *and the variable of ownership* ($TopSOE_{it}$) *or* ($Top1op_{it}$): SE_TopSOE_{it} *or* SE_Top1op_{it}

$\sum_{k=4}^{n} \beta_k Controls_{itk}$ *is the set of control variables: the size of the BoD (*$Bsize_{it}$*); the shareholding ratio of the board of directors (*$Bshareop_{it}$*); independent director percentage (*$Indep_{it}$*); the size of the supervisory board (*$Supsize_{it}$*); the total shareholding ratio of supervisors (*$Supsharep_{it}$*); firm size (*InA_{it}*); firm profitability (*ROA_{it}*); firm growth (*ΔREV_{it}*); leverage (*D/E_{it}*); net cash flow (*CF_{it}*); R&D investment (*$R\&D_{it}$*); and semi-mandatory dividend policy (*SEO_{it}*).*

Note that, given the number of explanatory variables to represent investor sentiment and ownership, the possible interaction variables in the above specification would include $\mathrm{SE\_TopSOE}_{it}$, $\mathrm{SE\_Top1op_{it}}$, $\mathrm{STurn\_TopSOE_{it}}$, $\mathrm{STurn\_Top1_{it}}$, $\mathrm{IPON\_TopSOE_{it}}$, $\mathrm{IPON\_Top1_{it}}$, $\mathrm{IPOR\_SOE_{it}}$, $\mathrm{IPOR\_Top1_{it}}$, $\mathrm{ES\_SOE_{it}}$, $\mathrm{ES\_Top1_{it}}$, $\mathrm{P_{it-1}^{D-ND}\_SOE_{it}}$ and $\mathrm{P_{it-1}^{D-ND}\_TOP1_{it}}$. All the variables apart from $\mathrm{SE\_TopSOE}_{it}$ and $\mathrm{SE\_Top1op_{it}}$ are used in the robustness test. Also, a probit model could be used to replace the logit model to check the consistency of the estimated results.

In addition to the above pair of hypotheses, the second set of hypotheses can be formulated to test the relationship between investor sentiment, ownership (highly concentrated and state ownership) and the *change* in dividend payment, as follows:

H5.1b: Investor sentiment affects SOEs on changes of cash dividends

H5.2b: Investor sentiment affects firms with large shareholder concentration on changes of cash dividends.

Researchers such as DeAngelo, DeAngelo and Stulz (2006); Bulan, Subramanian and Tanlu (2007) have applied OLS models in their studies link changes to the dividend

payment. Therefore, to test the above hypotheses, OLS estimation is applied to the following model:

$$\Delta D_{it} = \alpha_0 + X_{it} + X'_{it} + X\_X'_{it} + \sum_{k=4}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \qquad (5.2)$$

where:

α_0 *is the constant term*

X_{it} *is the index variable of investor sentiment* ($Sentiment_{it}$)

X'_{it} *is the variable of ownership: state ownership* ($TopSOE_{it}$) *or shareholding ratio of the largest shareholder* ($Top1op_{it}$)

$X\_X'_{it}$ *is the interaction term between the index variable of investor sentiment* ($Sentiment_{it}$) *and the variable of ownership* ($TopSOE_{it}$) *or* ($Top1op_{it}$): SE_TopSOE_{it} *or* SE_Top1op_{it}

$\sum_{k=4}^{n} \beta_k Controls_{itk}$ *is the set of control variables: the size of the BoD* ($Bsize_{it}$); *the shareholding ratio of the board of directors* ($Bshareop_{it}$); *independent director percentage* ($Indep_{it}$); *size of the supervisory board* ($Supsize_{it}$); *the total shareholding ratio of supervisors* ($Supsharep_{it}$); *firm size* (InA_{it}); *firm profitability* (ROA_{it}); *firm growth* (ΔREV_{it}); *leverage* (D/E_{it}); *net cash flow* (CF_{it}); *R&D investment* ($R\&D_{it}$); *and semi-mandatory dividend policy* (SEO_{it}).

A tobit model could also be used as an alternative model for the robustness checking of hypotheses H5.1b and H5.2b.

3.1.3 Market Liquidity, Ownership and Dividend Policy

This section discusses the dependent, explanatory and control variables that examine the relationship between market liquidity, ownership (highly concentrated state ownership) and dividend payment, the empirical analysis for which is conducted in Chapter 6. Here, the dependent variables, dividend decision ($\mathrm{Payer}_{\mathrm{it}}$) and Changes in Dividend ($\Delta \mathrm{D}_{\mathrm{it}}$) are as same as those in Chapter 4 and Chapter 5. The control variables are also the same as in Chapter 5 and described earier in section 3.4.1. The main explanatory variables are described in section 3.4.3.1.

3.1.3.1 Explanatory Variables

To examine the association between market liquidity, ownership structure (highly concentrated state ownership) and dividend policy, the main explanatory variables for representing market liquidity are described below.

i. Indicator of Stock Liquidity: Illiquidity ($Illiq_{it}$)

$\underline{\mathrm{Illiq}_{\mathrm{it}}}$ is the indicator of stock liquidity, which is presented by the Amihud (2002) illiquidity ratio. Following Amihud (2002) and Jiang et al. (2017), and based on the database collected from CSMAR, illiquidity in this research is computed as the average ratio of the daily absolute return to the trading volume in Chinese yuan. This variable is widely used to measure liquidity (Amihud 2002; Goyenko, Holden, & Trzcinka 2009; Jiang et al. 2017). We multiply the daily stock return by 100 and measure the trading volume in million RMB to obtain a larger value of variable illiquidity. A higher value of illiquidity corresponds to a lower level of liquidity. Illiquidity is defined as follows:

$$Illiq_{it} = \frac{1}{D_{it}} \times \sum_{d=1}^{D} \frac{|Ret_{itd}|}{Vol_{itd}}$$

where:

Ret_{itd} *is the daily stock return multiplied by 100*

Vol_{itd} *is the trading volume in million RMB of firm i on day d*

D_{it} *is the number of trading days for firm i in year t*

ii. Indicator of Market Liquidity: BAS ($\mathrm{BAS_{it}}$)

$\underline{\mathrm{BAS_{it}}}$ is the spread between the bid price (the highest stock buying price) and the ask price (the lowest stock selling price), which has been shown to reflect the underlying liquidity for a particular stock and is considered to be a measure of the supply and demand for this stock (Roll 1984; Amihud 2002; Plerou, Gopikrishnan, & Stanley 2005). We use the simplest type of bid-ask spread, the quoted spread, as an alternative measure of stock liquidity for the robustness test. It is calculated as follows:

$$\mathrm{BAS_{it}} = \frac{1}{D_{it}} \times \sum_{d=1}^{D} \left(\frac{Ask_{itd} - Bid_{itd}}{Midpoint_{itd}} \times 100\right)$$

where:

Ask_{it} *is the lowest asking price of firm stock i on day d*

Bid_{itd} *is the highest bid price of firm stock i on day d*

$Midpoint_{itd}$ *is the average between the lowest ask and highest bid*

D_{it} *is the number of trading days for firm i in year t*

iii. Indicator of Stock Liquidity: Turnover Ratio ($\mathrm{TurnOver_{it}}$),

$\underline{\text{TurnOver}_{it}}$ is the annual firm turnover ratio and calculated as the accumulative value of daily trading volume in shares of stocks to the number of outstanding shares of the stock. A higher turnover ratio means more frequent trading and higher liquidity, which is found to influence dividend payment negatively in previous research (Hu 1997; Amihud 2002; Oladipupo & Okafor 2013). This variable is later used as an alternative measure of stock liquidity in the robustness check and is described as follows:

$$\text{TurnOver}_{\text{it}} = \frac{Vol_{it}}{SN_{it}}$$

where:

Vol_{it} is the annual reported share volume of firm i at year t

SN_{it} is the average number of shares outstanding of firm i at year t

3.1.3.2 Hypotheses, Model Specification and Estimation Technique

To first the relationship between market liquidity, ownership (highly concentrated and state ownership) and the propensity for dividend payment, the first pair of testable hypotheses proposed are:

H6.1a: The propensity of SOEs to pay cash dividends is affected by stock liquidity

H6.2a: The propensity of firms with large shareholder concentration to pay cash dividend is affected by stock liquidity

To empirically test the above hypotheses related to a binary dependent variable, following Baker and Wurgler (2004), Li and Lie (2006), Denis and Osobov (2008), the logit regression is estimated as follows:

$$Logit(Payer_{it} = 1) = \alpha_0 + X_{it} + X'_{it} + X\_X'_{it} + \sum_{k=4}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \quad (6.1)$$

where:

α_0 *is the constant term*

X_{it} *is the variable of market liquidity* (Liq_{it})

X'_{it} *is the variable of ownership: state ownership* ($TopSOE_{it}$) *or shareholding ratio of the largest shareholder* ($Top1op_{it}$)

$X\_X'_{it}$ *is the interaction term between the variable of market liquidity* (Liq_{it}) *and the variable of ownership* ($TopSOE_{it}$) *or* ($Top1op_{it}$): Liq_TopSOE_{it} *or* Liq_Top1op_{it}

$\sum_{k=4}^{n} \beta_k Controls_{itk}$ *is the set of control variables: the size of the BoD* ($Bsize_{it}$); *the shareholding ratio of the board of directors* ($Bshareop_{it}$); *independent director percentage* ($Indep_{it}$); *the size of the supervisory board* ($Supsize_{it}$); *the total shareholding ratio of supervisors* ($Supsharep_{it}$); *firm size* (InA_{it}); *firm profitability* (ROA_{it}) *firm growth* (ΔREV_{it}); *leverage* (D/E_{it}); *net cash flow* (CF_{it}); *R&D investment* ($R\&D_{it}$); *dividend premium* (P_{it-1}^{D-ND}); *and semi-mandatory dividend policy* (SEO_{it}).

A probit model could be used to replace the logit model to test hypotheses H6.1a and H6.2a and to check for the consistency of the results with the logit model.

The second set of hypotheses aims to test the relationship between market liquidity, ownership (highly concentrated and state ownership) and the *change* in dividend payment, proposed as follows:

H6.1b: Stock liquidity affects SOEs on changes of cash dividends

H6.2b: Stock liquidity affects firms with large shareholder concentration on changes of cash dividends.

Following DeAngelo, DeAngelo and Stulz (2006); Bulan, Subramanian and Tanlu (2007), to test the above hypotheses, OLS estimation can be applied to the model:

$$\Delta D_{it} = \alpha_0 + X_{it} + X'_{it} + X\_X'_{it} + \sum_{k=4}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \qquad (6.2)$$

where:

α_0 *is the constant term*

X_{it} *is the variable of market liquidity* (Liq_{it})

X'_{it} *is the variable of ownership: state ownership* ($TopSOE_{it}$) *or shareholding ratio of the largest shareholder* ($Top1op_{it}$)

$X'_{X_{it}}$ *is the interaction term between the variable of market liquidity* (Liq_{it}) *and the variable of ownership* ($TopSOE_{it}$) *or* ($Top1op_{it}$): $Liq_{TopSOE_{it}}$ *or* $Liq_{Top1op_{it}}$

$\sum_{k=4}^{n} \beta_k Controls_{itk}$ *is the set of control variables: the size of the BoD* ($Bsize_{it}$); *the shareholding ratio of the board of directors* ($Bshareop_{it}$); *independent director percentage* ($Indep_{it}$); *the size of the supervisory board* ($Supsize_{it}$); *the total shareholding ratio of supervisors* ($Supsharep_{it}$); *firm size* (InA_{it}); *firm profitability* (ROA_{it}); *firm growth* (ΔREV_{it}); *leverage* (D/E_{it}); *net cash flow* (CF_{it}); *R&D investment* ($R\&D_{it}$); *dividend premium* (P_{it-1}^{D-ND}); *and semi-mandatory dividend policy* (SEO_{it}).

The hypotheses that market liquidity and corporate ownership affect dividend policy in the above model are tested using interaction effects of various proxies representing ownership and market liquidity, namely Illiq_TopSOE_{it}, Illiq_Top1op_{it}, BAS_TopSOE_{it}, BAS_Top1op_{it}, Turn_TopSOE_{it} and Turn_Top1op_{it}. Of these, BAS_TopSOE_{it}, BAS_Top1op_{it}, Turn_TopSOE_{it} and Turn_Top1op_{it} are used in the

robustness check. Also, as before, a tobit estimation could alternatively be applied as a robustness check of hypotheses H6.1b and H6.2b.

3.2 Conclusion

This chapter has discussed the methodology to be employed in the empirical analysis. After a brief overview of the research philosophy, the data collection procedure was described, the variables were defined and the models were specified in accordance with the hypotheses formulated.

Chapter 4

SUPERVISORY BOARD AND DIVIDEND POLICY

4.1 Introduction

This chapter presents the empirical analysis of the effects of the supervisory board on dividend policy decisions, including the propensity for, level of and changes to cash dividend payments, based on a sample of Chinese listed firms. The structure of supervisory boards across different economies has evolved as either one-tier or two-tier type based on national and legal origins. In the US or UK, there are one-tier systems, which consist of a unitary board of directors and executive management (Maassen 1999; Krivogorsky 2006), and researchers have conducted an empirical analysis of how the board of directors influences dividend policy in the US or UK markets with mixed results (e.g., Kiel & Nicholson 2003; Mancinelli & Ozkan 2006; Ntim & Osei 2011; Elmagrhi et al. 2017). On the other hand, in Germany, China and some other European and Asian countries, a two-tier system comprising both the board of directors and the supervisory board operates (Wang 2008). The association between the supervisory board and dividend policy has also been explored in European and Asian countries, such as Germany, France, Finland, Japan and China; and the empirical analysis has similarly produced mixed results. (e.g., Agrawal & Knoeber 2001; Gorton & Schmid 2004; Fich 2005; Fauver & Fuerst 2006; Böckli 2009; Hommelhoff & Hopt 2009; Block & Gerstner 2016).

The Chinese supervisory board is a typical example of a board operating on national and legal origins; it was based on, but is different from, the German supervisory

board model (Dahya, Karbhari, & Xiao 2002; Ding et al. 2009; Zhao 2009). First, the authority and status of the Chinese and German supervisory boards are different. The German version has much higher authority, which can not only monitor management but also has important decision rights. By contrast, the Chinese board is less independent and to some extent powerless, as they can only act as counsellor and make comments on or criticise management decisions. Second, the members of the German supervisory board are supported and protected by relevant organisations, but this is not the case with members of the Chinese board. The codetermination in German supervisory boards also helps to protect the interests of the firm and its employees (Wiedemann 1980; Gorton & Schmid 2000; Renaud 2007). However, the employee representatives on the Chinese supervisory boards lack support because there is no relevant organization such as a union that could offer them protection. Finally, the business operations in Chinese companies are more complex and the specificities of Chinese ownership, such as the SOEs, could influence the function of the supervisory board. As a result, the simple replication of the two-tier system must be enhanced according to the specificities of the Chinese stock market and the basic principles of the law also need to be refined (Lee 2019). The reasons behind why the German supervisory board works successfully but seems to fail in China need to be investigated further in this research, in order to provide further insight into their weaknesses.

The association between Chinese supervisory boards and dividend policy has been examined from different aspects, such as size and employee representatives, with varying results. Some research suggests that smaller supervisory boards influence

dividend policy more strongly because they are more flexible and effective, while other studies argue that larger ones will impact dividend payments because they are more academic (Agrawal & Knoeber 2001; Fich 2005; Guest 2009; Lublin 2014). Some other studies investigating the relationship between employee representatives and dividend payment support the notion that employee representatives prefer to pay dividends to dampen insider expropriation (Faccio, Lang, & Young 2001; La Porta et al. 2002). However, the ways in which the Chinese supervisory board influences dividend payout policy, including features that have already been studied and ones that have been little explored, such as receipt of emoluments and independence, still need further analysis.

This chapter examines the relationship between the Chinese supervisory board and decisions on dividend payments. Using the methodology and data outline in chapter 3, we investigate how the features of the Chinese supervisory board, including size, receipt of emoluments, employee representatives, shareholding ratio and dependent director representatives, can influence cash dividend payments. The empirical analysis in this chapter focusses on how the Chinese supervisory board structure impacts dividend policy.

While briefly repeating what might be already covered in earlier chapters, section 4.2 reviews the related literature in order to develop the hypotheses that were simply stated in chapter 3. Section 4.3 outlines the models for the regressions, while Section 4.4 presents the descriptive statistics including univariate analysis. Section 4.5 discusses the empirical findings including robustness analysis. Section 4.6 draws the conclusions.

4.2 Related Literature and Hypothesis Development

4.2.1 The Size of the Supervisory Board

Dividend policy has been argued to mitigate conflicts between management, who may be reluctant to satisfy the best interests of shareholders, who expect greater returns from their investments (Grossman & Hart 1980; Easterbrook 1984; Jenson 1986). In addition, paying dividends makes firms exposed more frequently, which allows for better monitoring (Easterbrook 1984). In turn, dividend policy is influenced by agency costs and the strength of shareholder rights (Gompers, Ishii, & Metrick, 2003). The board of directors is appointed by the shareholders and represents their interests; and the members of the board have the responsibility to monitor management and its decisions (Block & Gerstner 2016). As a result, the board can influence dividend payment on the basis of the board size and board independence. Previous research has found evidence that board size influences the effectiveness of governance and determines dividend payment decisions. Studies such as those of Guest (2009) and Lublin (2014) argue that a larger board could increase problems of communication and reduce the ability to control management. At the same time, a larger board is less flexible and responsible than a smaller one, which leads to less effective oversight of management (Lipton & Lorsch 1992; Yermack 1996; Eisenberg, Sundgren, & Wells 1998; Guest 2009; Lublin 2014). Besides these issues, pressure from institutions and regulations has resulted in a decrease in average board size (Wu 2004). These studies indicate that a larger board cannot help to strengthen shareholders' rights and increases agency costs, which will have a negative impact on dividend policy. In a two-tier system, the supervisory board

is structured separately to monitor management and its decisions (Jungmann 2006; Block & Gerstner 2016). As it grows in size, it may face the same problems as the board of directors with regard to communication, monitoring and being less responsible, which will have a negative influence on dividend payments.

On the other hand, some studies posit that a larger board impacts firms' decisions and dividend payments positively because it contains more outsider representation, with more experience and knowledge and ability to provide better advice, which works better for a large complex company (Hermalin & Weisbach 1988; Dalton et al. 1999; Agrawal & Knoeber 2001; Fich 2005). However, the members of the supervisory board comprise people who are related to the firms, apart from the directors and the management, which means it is an inside board and will always obtain information from management. Management could provide information in line with their personal opinions, which may cause a problem of information asymmetry (Böckli 2009; Hommelhoff & Hopt 2009; Bolck & Gerstner, 2016). As a result, a larger supervisory board may work ineffectively, with less independent judgement, which may result in it being unable to monitor and control management, as well as having a negative effect on dividend policy. As a result, the above discussion leads to the following hypotheses:

H4.1a: Supervisory board size affects the propensity to pay dividends

H4.1b: Supervisory board size affects the level of cash dividends

H4.1c: Supervisory board size is associated with changes on dividend payments.

4.2.2 Emolument received by the Supervisory Board

Compensation helps to resolve agency problems between shareholders and management. Previous research has examined the link between management compensation and agency problems and found that the receipt of compensation by management can influence corporate governance and dividend policy, as executive compensation provides managers with effective incentives to maximise shareholder benefits (Murphy 1999; Bertrand & Mullainathan 2001; Bebchuk & Fried 2003). Some studies show that equity-based executive compensation influences dividend payout and capital structure decisions in a different way. An investment opportunity hypothesis has been proposed, that if management has more stock incentives, this will reduce cash dividend payments (Lambert, Lanen, & Larcker 1989; Mehran 1992; White 1996; Berger, Ofek, & Yermack 1997; Fenn & Liang 2001; Kang, Kumar, & Lee 2006). However, some research proposes that the concentrated ownership or the large shareholders in China have substantial influence on the compensation of board of directors. Therefore, director compensation may not be able to resolve the agency conflict and have adjusted influence on dividend payment (Chen et al 2017; Chen et al. 2019).

Similarly, paying the members of the supervisory board could also reduce the agency problem and encourage it to better stand for stakeholders' benefits and to monitor management and its decisions. Moreover, paying compensation could be a way to give the supervisory board members an incentive to do a better job. Compared to working without an emolument, the members in receipt of such fees may be more responsible. As a result, if more members of the supervisory board receive emoluments,

this may have a positive impact on the cash dividend payment. However, if the payment of members does not inspire them as expected or manipulated by the state-controlled or majority shareholders (Chen et al 2017; Chen et al. 2019), this will only increase agency costs. These considerations lead to the following testable hypotheses:

H4.2a: Emolument-receiving members on supervisory boards affect the propensity to pay dividends

H4.2b: Emolument-receiving members on supervisory boards affect the level of cash dividends

H4.2c: Emolument-receiving members on supervisory boards are associated with changes on dividend payments.

4.2.3 Employee representation on the Supervisory Board

In a two-tier system, the supervisory board is required to include employee representatives for better monitoring and to represent stakeholder benefits. Some previous research has proposed that employee representation on the supervisory board could influence company governance and payout policy. Gorton and Schmid's (2004) research on the 250 largest German stock corporations found that a higher level of employee representation can weaken the firm's objective to satisfy shareholders' benefits. Moreover, Fauver and Fuerst (2006) found that employee representation on the supervisory board is quite important and useful, as it provides a powerful means of monitoring, reduces agency costs and improves governance effectiveness. They also found that firms with employee representatives are more likely to pay dividends in order

to dampen insider expropriation (Faccio, Lang, & Young 2001; La Porta et al. 2002). Other researchers, such as Benelli, Loderer, & Lys (1987), also support the notion that employee representation on the board can influence business policy decisions.

Both the Chinese and the German supervisory boards are required to have a certain number of employee representatives. However, unlike those on German boards, who are supported by the union to ensure they can exercise power, representatives on Chinese supervisory boards lack support because there are no relevant organisations such as unions that could offer them protection. As a result, in practice, the function of employee representatives seems to be ineffective. Based on the discussion above, we propose the hypotheses as follows:

H4.3a: Employee representatives on a supervisory board do not significantly affect the propensity to pay dividends

H4.3b: Employee representatives on a supervisory board do not significantly affect the level of cash dividends

H4.3c: Employee representatives on a supervisory board are not associated with changes in dividend payments.

4.2.4 Total Shareholding of Supervisors

Shareholders prefer different dividend policies depending on their personal benefits, and previous research has explored how stock owners affect payout policy. It has been proven that considering the high taxes, executives or managers who held large amounts of shares in options preferred low dividend payments for personal financial incentives

before the dividend tax cut in the US in 2003 (Lambert, Lanen, & Larcker 1989; Jolls 1998; Weisbenner 2000; Fenn & Liang 2001; Kahle 2002). However, Brown, Liang, & Weisbenner (2007) found that after the 2003 tax cut, executives had the incentive to raise dividends when their shareholdings were high for personal benefit, which is consistent with tax effect or tax-induced clientele effect theory. Many researchers have also reported a positive relationship between insider ownership and increased dividends when considering their own personal wealth and tax advantages, which can be explained by the "bird in the hand", agency and tax effect theories (Shleifer & Vishny 1986; Allen, Bernardo, & Welch 2000; Short, Zhang, & Keasey 2002; Blouin, Ready, & Shackelford 2004). When the members of the supervisory board hold shares, they also expect personal benefits from dividend payments; moreover, as shareholders, they can inhibit management's jobbery by encouraging such payment. They stand for shareholders' benefits and monitor the managers in case they hold a large amount of cash for personal interests or investments (Allen, Bernardo, & Welch 2000; Short, Zhang, & Keasey 2002). Therefore, supervisory board shareholders can positively affect cash dividend payment. Based on the discussion above, testing hypotheses are formulated as follows:

H4.4a: Higher supervisory board shareholding positively affects the propensity to pay dividends

H4.4b: Higher supervisory board shareholding positively affects the level of cash dividends

H4.4c: Higher supervisory board shareholding is associated with increases in dividend payments.

4.2.5 Dependent Director Representative in Supervisory Board

Corporate boards, such as boards of directors and supervisory boards, are required to include both independent and dependent members in many countries, such as the UK, US, Germany and Japan (Harris & Raviv 2006; Block & Gerstner 2016). Some previous research has studied the correlation between the independence of the board of directors and board decisions and suggests that the independence of boards influences their decisions and shareholder benefits. For example, some researchers propose that independent external directors provide information to help make decisions on maximising firm profits, while dependent insiders not only give private information but also consider their own personal benefits (Grinstein & Tolkowsky 2004; Adams & Feirrera 2007). Some researchers propose that independent directors can control and reduce the interests of shareholders, a process that is driven by agency problems (Burns 2004; Luchetti & Lublin 2004, Adams & Ferreira 2007). Other researchers have also studied the correlation between outside directors and board functions, finding that outside directors make a contribution to better monitoring because of their independence, and insiders give better advice and more firm-specific knowledge (Adams & Ferreira 2007; Linck, Netter, & Yang 2008; Lehn, Patro, & Zhao 2009; Adams, Hermalin, & Weisbach 2010; Armstrong, Guay, & Weber 2010; Duchin, Matsusaka, & Ozbas 2010). In conclusion, in comparison to independent directors,

although dependent ones can provide more inside firm-specific information, they are weak at monitoring management and influenced by personal benefits when they make decisions.

In China, some members of supervisory boards have a close working relationship with the board of directors, such as the chairman's secretary and chairman's assistant, who may be easily influenced by the board of directors because of the board's private information or close personal relationships, which can lead to a lack of independence of the supervisory board (Bansal, Lopez-Perez, & Rodriguez-Ariza 2018; Farag & Mallin 2019). As the board of directors represents the interests of shareholders and has a positive attitude towards paying dividends, as a result, dependent members who are also the secretaries or assistants to the chairman, could have a positive effect on cash dividend payments. The above discussion leads to the following testable hypotheses:

H4.5a: The dependent representatives of the director on the supervisory board have a significant effect on the propensity to pay dividends

H4.5b: The dependent representatives of the director on the supervisory board have a significant effect on the level of cash dividends

H4.5c: The dependent representatives of the director on the supervisory board have a significant effect on changes on dividend payments.

4.3 Methodology

The data selection procedure for testing the above hypotheses is described in section 3.2 and the model specifications are outlined in section 3.4 of chapter 3. Here, for ease of analysis, it suffices to simply state the specifications for each set of hypotheses:

For testing hypotheses 4.1a – 4.5a:

$$Logit(Payer_{it} = 1) = \alpha_0 + \sum_{n=1}^{m=5} \beta_n X_{itn} + \sum_{k=6}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \quad (4.1)$$

For testing hypotheses 4.1b – 4.5b:

$$Dividend_{it} = \alpha_0 + \sum_{n=1}^{m=5} \beta_n X_{itn} + \sum_{k=6}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \quad (4.2)$$

For testing hypotheses 4.1c – 4.5c:

$$\Delta D_{it} = \alpha_0 + \sum_{n=1}^{m=5} \beta_n X_{itn} + \sum_{k=6}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \quad (4.3)$$

where:

α_0 *is the constant term*

$\sum_{n=1}^{m=5} \beta_n X_{itn}$ *is a set of main explanatory variables representing supervisory board characteristics, namely: the size of the supervisory board (*$Supsize_{it}$*); the emolument payment ratio of the supervisory board (* $Supaid_{it}$ *); the ratio of employee representation on the supervisory board (*$Employeep_{it}$*); the total shareholding ratio of supervisors (*$Supsharep_{it}$*); supervisory board independence (*$Directorp_{it}$*).*

$\sum_{k=6}^{n} \beta_k Controls_{itk}$ *is the set of control variables: the size of the BoD (*$Bsize_{it}$*); the shareholding ratio of the board of directors (*$Bshareop_{it}$*); independent director percentage (*$Indep_{it}$*); dummy SOE (*$TopSOE_{it}$*); the shareholding ratio of the largest shareholder (*$Top1op_{it}$*); firm size (*InA_{it}*); firm profitability (*ROA_{it}*); firm growth (*ΔREV_{it}*); leverage (*D/E_{it}*); net cash flow (*CF_{it}*); R&D investment (*$R\&D_{it}$*); stock*

market turnover ($STurn_{it-1}$); dividend premium (P_{it-1}^{D-ND}); and semi-mandatory dividend policy (SEO_{it}).

In the above specifications (4.1)-(4.3), the dependent variables are different owing to the nature of the hypotheses being tested, but since the hypotheses are otherwise similar, the explanatory and control variables are common. The precise definitions of the dependent, explanatory and control variables employed are detailed in section 3.4 of chapter 3.

4.4 Descriptive Statistics

4.4.1 Summary Statistics

Table 4.1 shows the descriptive statistics for dividend policy (Panel A), supervisory boards (Panel B) and other control variables which could affect dividend policy (Panel C). The mean value of Payer_{it} is 0.656, showing that more than half of the firms decided to pay cash dividends (Payer_{it}) every year. The mean value of cash dividend payments is 0.012, which is higher than the median value (0.006), which also confirms that the sample distribution of the payout is skewed to the right. The median value of ΔD_{it} is 0.000, which indicates that most of the firms would like to maintain stable cash dividend payments every year.

With regard to the explanatory variables, the size of the Chinese supervisory board (Supsize_{it}) is between 1 to 14 members, with an average size of around 4 members. The minimum ratio of employee representatives (Employeep_{it}) is 0, and the maximum is 80%; on average, around 35% of the members of the Chinese supervisory boards are

employee representatives. The shareholding ratio of supervisors ($\mathrm{Supsharep}_{it}$) ranges from zero to 0.043, with an average value is 0.002. Director representatives ($\mathrm{Directorp}_{it}$), who have a close working relationship with the board of directors, such as the chairman's secretary and assistant, comprise at most 20% of the members. The average board size (Bsize_{it}) is 9, which is higher than the average supervisory board size. The average shareholding levels of directors ($\mathrm{Bshareop}_{it}$), executives ($\mathrm{Exeshareop}_{it}$) and the largest shareholders ($\mathrm{Top1op}_{it}$) are quite high, which means they hold a considerable number of shares and the degree of shareholding concentration is high. This indicates, first, that both the large shareholders and the members of the board of directors would prefer higher dividend payments to satisfy their own desires (Shleifer & Vishny 1986; Allen, Bernardo, & Welch 2000; Short, Zhang, & Keasey 2002; Blouin, Ready, & Shackelford 2004). Second, the largest shareholders can manipulate dividend payments at will because they in fact hold considerable power over dividend decisions (Zingales 1994, 1995; Nenova 2000; Dyck & Zingales 2004). Third, the executives could either choose to pay more cash dividends or hold cash for further investments according to the way in which they are rewarded. When they prefer cash dividends, they will stand by the shareholders when they choose to reduce cash dividend payments when there is equity-based executive compensation (Berger, Ofek, & Yermack 1997; Fenn & Liang 2001; Kang, Kumar, & Lee 2006).

Table 4.1 Summary Statistics for Chapter 4

Panel A: Dependent Variables						
VARIABLE	N	Mean	Median	Std. Dev.	Min	Max
$Payer_{it}$	18,412	0.656	1.000	0.475	0.000	1.000
$Divlevel_{it}$	18,412	0.012	0.006	0.018	0.000	0.300
ΔD_{it}	18,412	-0.004	0.000	0.287	-1.136	0.712
Panel B: Supervisory Board Variables						
VARIABLE	N	Mean	Median	Std. Dev.	Min	Max
$Supsize_{it}$	18,412	3.707	3.000	1.185	1.000	14.000
$Supaid_{it}$	18,412	0.709	0.667	0.276	0.200	1.000
$Employeep_{it}$	18,412	0.346	0.333	0.198	0.000	0.800
$Supsharep_{it}$	18,412	0.002	0.000	0.007	0.000	0.043
$Directorp_{it}$	18,412	0.006	0.000	0.034	0.000	0.200
Panel C: Control Variables						
VARIABLE	N	Mean	Median	Std. Dev.	Min	Max
$Bsize_{it}$	18,412	8.833	9.000	1.787	0.000	18.000
$Bshareop_{it}$	18,412	0.096	0.000	0.175	0.000	0.625
$Exeshareop_{it}$	18,412	0.051	0.000	0.119	0.000	0.524
$Indep_{it}$	18,412	0.370	0.333	0.048	0.333	0.500
$Top1op_{it}$	18,412	0.446	0.000	0.497	0.000	1.000
$TopSOE_{it}$	18,412	0.227	0.200	0.180	0.003	0.632
InA_{it}	18,412	21.955	21.795	1.250	19.639	25.202
ROA_{it}	18,412	0.037	0.034	0.052	-0.135	0.165
ΔREV_{it}	18,412	0.215	0.107	0.631	-0.619	4.740
D/E_{it}	18,412	1.220	0.805	1.246	0.048	5.912
CF_{it}	18,412	0.042	0.042	0.077	-0.203	0.257
$STurn_{it-1}$	18,412	8.239	8.169	0.392	7.710	8.987
$R\&D_{it}$	18,412	0.003	0.000	0.013	0.000	0.087
SEO_{it}	18,412	0.360	0.000	0.480	0.000	1.000
P_{it-1}^{D-ND}	18,412	-0.099	-0.102	0.031	-0.147	-0.032

This table presents summary statistics of all the variables used for the regressions. The sample period is from 2008 to 2016 and the sample comprises all listed firms that issued A-shares on the Shenzhen and Shanghai Exchanges. All the variables except for the dummy ones are winsorized at the 1st and 99th percentile values to eliminate outliers. The dependent variable $Payer_{it}$ equals 1 when firms decide to pay cash dividends and 0 otherwise; $Divlevel_{it}$ is defined as the level of cash dividend payment; ΔD_{it} represents changes in dividends. The independent variables comprise the size of the supervisory board ($Supsize_{it}$); the emolument payment ratio of the supervisory board ($Supaid_{it}$); the employee representative ratio on the supervisory board ($Employeep_{it}$); the shareholding ratio of supervisors ($Supsharep_{it}$); supervisory board independence ($Directorp_{it}$); and other control variables which are the size of the BoD ($Bsize_{it}$); the shareholding ratio of the board of directors ($Bshareop_{it}$); the shareholding ratio of executives ($Exeshareop_{it}$); independent director percentage ($Indep_{it}$); the largest state-owned shareholder ($TopSOE_{it}$); the shareholding ratio of the largest shareholder ($Top1op_{it}$); firm size (InA_{it}); firm profitability (ROA_{it}); firm growth (ΔREV_{it}); leverage (D/E_{it}); net cash flow (CF_{it}); share turnover ($STurn_{it-1}$); R&D investment ($R\&D_{it}$); semi-mandatory dividend policy (SEO_{it}); and dividend premium (P_{it-1}^{D-ND}).

4.4.2 Univariate Analysis

Table 4.2 presents the univariate analysis of the variables used in the empirical analysis of the relationship between the supervisory board and dividend payment. For this analysis, the variables are classified according to whether the firms paid dividends or not, i.e. into payer and nonpayer groups. All the variables are tested for mean differences using a simple t-test. The mean differences of the supervisory board factors, namely Supsize_{it}, Supaid_{it}, Employeep_{it}, Supsharep_{it} and Directorp_{it} between nonpayers and payers are 0.063, -0.038, -0.025, -0.002 and 0.001 respectively, which are statistically significant at the 1% or 5% levels. The values of the mean differences first indicate that compared to a large supervisory board, a smaller one gives more support to paying cash dividends, which is consistent with the research claims that smaller supervisory boards work more effectively, with independent judgement, and are able to monitor and control management, as well as having a positive effect on dividend policy (Guest 2009; Lublin 2014). Second, supervisory boards with more emolument-receiving members, employee representatives and holding a larger number of shares have more incentive to pay cash dividends. As previous research suggests, both compensation and employee representation could encourage supervisory boards to better represent stakeholders' benefits and monitor management and its decisions, and may have a positive impact on dividend policy (Fenn & Liang 2001; Faccio, Lang, & Young 2001; Kang, Kumar, & Lee 2006; Fauver & Fuerst 2006). Finally, the dependence of the supervisory board probably affects a firm's payout decisions because

the dependent members hold private information and have private interests (Grinstein & Tolkowsky 2004; Adams & Feirrera 2007).

Most of the mean differences of the control variables are statistically significant at the 5% level. The results first indicate that the mean differences of $\mathrm{Bshareop}_{it}$, $\mathrm{Exeshareop}_{it}$ and $\mathrm{Top1op}_{it}$ between nonpayers and payers are negative and statistically significant, implying that shareholders who hold more shares prefer to receive more cash dividends (Short, Zhang, & Keasey 2002; Blouin, Ready, & Shackelford 2004). Second, the mean difference of TopSOE_{it} between nonpayers and payers is positively significant, which supports the notion that companies which are state-controlled are unwilling to pay cash dividends (Faccio, Lang, & Young 2001; Bradford, Chen, & Zhu 2013). Third, the significant mean differences of InA_{it}, ROA_{it} and $\Delta\mathrm{REV}_{it}$ between nonpayers and payers are consist with life-cycle theory (DeAngelo et al. 2006; Denis & Osobov 2008), and finally, the mean differences of STurn_{it-1} and P_{it-1}^{D-ND} between nonpayers and payers are both positively significant, which could indicate that investors have higher sentiment towards firms that do not pay cash dividends and look forward to them paying in the future.

Table 4.2 Univariate Analysis of Dividend Payers and Nonpayers for Chapter 4

	Payers			Nonpayers			Nonpayers - Payers		
VARIABLE	N	Mean	Median	N	Mean	Median	N	Mean Diff.	t-stat
$Supsize_{it}$	12,267	3.686	3.000	6,145	3.749	3.000	18,412	0.063***	3.406
$Supaid_{it}$	12,267	0.722	0.667	6,145	0.685	0.667	18,412	-0.038***	-8.714
$Employeep_{it}$	12,267	0.354	0.333	6,145	0.330	0.333	18,412	-0.025***	-8.045
$Supsharep_{it}$	12,267	0.003	0.000	6,145	0.001	0.000	18,412	-0.002***	-16.863
$Directorp_{it}$	12,267	0.006	0.000	6,145	0.007	0.000	18,412	0.001**	2.256
$Bsize_{it}$	12,267	8.903	9.000	6,145	8.693	9.000	18,412	-0.210***	-7.533
$Bshareop_{it}$	12,267	0.119	0.001	6,145	0.049	0.000	18,412	-0.070***	-25.872
$Exeshareop_{it}$	12,267	0.065	0.000	6,145	0.024	0.000	18,412	-0.040***	-22.034
$Indep_{it}$	12,267	0.370	0.333	6,145	0.371	0.333	18,412	0.001	1.498
$TopSOE_{it}$	12,267	0.425	0.000	6,145	0.488	0.000	18,412	0.063***	8.166
$Top1op_{it}$	12,267	0.235	0.208	6,145	0.211	0.183	18,412	-0.024***	-8.414
InA_{it}	12,267	22.133	21.955	6,145	21.597	21.494	18,412	-0.536***	-22.034
ROA_{it}	12,267	0.053	0.045	6,145	0.004	0.010	18,412	-0.049***	-28.015
ΔREV_{it}	12,267	0.209	0.129	6,145	0.226	0.048	18,412	0.017***	-66.565
D/E_{it}	12,267	1.014	0.696	6,145	1.631	1.109	18,412	0.617*	1.765
CF_{it}	12,267	0.052	0.050	6,145	0.023	0.022	18,412	-0.029	32.585
$STurn_{it-1}$	12,267	8.214	8.169	6,145	8.290	8.285	18,412	0.076***	36.653
$R\&D_{it}$	12,267	0.004	0.000	6,145	0.003	0.000	18,412	-0.001***	12.397
SEO_{it}	12,267	0.374	0.000	6,145	0.332	0.000	18,412	-0.042***	-5.564
P_{it-1}^{D-ND}	12,267	-0.101	-0.104	6,145	-0.095	-0.102	18,412	0.006***	-5.043

This table presents univariate analysis of payers and nonpayers. Payers are defined as firms which pay cash dividends, while nonpayers are those which do not pay cash dividends. The sample period is from 2008 to 2016. The sample comprises all listed firms that issued A-shares on the Shenzhen and Shanghai Exchanges. All the variables apart from dummy ones are winsorized at the 1st and 99th percentile values. ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The variables comprise the size of the supervisory board ($Supsize_{it}$); the emolument payment ratio of the supervisory board ($Supaid_{it}$), the employee representative ratio on the supervisory board ($Employeep_{it}$); the shareholding ratio of supervisors ($Supsharep_{it}$); supervisory board independence ($Directorp_{it}$), and other control variables which are the size of the BoD ($Bsize_{it}$); the shareholding ratio of the board of directors ($Bshareop_{it}$); the shareholding ratio of executives ($Exeshareop_{it}$); independent director percentage ($Indep_{it}$); the largest state-owned shareholder ($TopSOE_{it}$); the shareholding ratio of the largest shareholder ($Top1op_{it}$); firm size (InA_{it}); firm profitability (ROA_{it}); firm growth (ΔREV_{it}); leverage (D/E_{it}); net cash flow (CF_{it}); share turnover ($STurn_{it-1}$); R&D investment ($R\&D_{it}$); semi-mandatory dividend policy (SEO_{it}); and dividend premium (P_{it-1}^{D-ND}).

4.4.3 Correlation Test

Table 4.3 provides the Pearson's correlation coefficients of the independent variables for the entire sample. A correlation coefficient close to or equal to +1 or -1 suggests high collinearity or perfect multicollinearity among the variables. Most of the correlations are close to or below 0.35, which implies low multicollinearity among the variables, raising no issues for estimation.

Table 4.3 Correlation Matrix for Chapter 4

	$Supsize_{it}$	$Supid_{it}$	$Employeep_{ti}$	$Supsharep_{it}$	$Directorp_{i}$	$Bsize_{it}$	$Bshareop_{it}$	$Exeshareo_{ti}$	$Indep_{it}$	$TopSOE_{it}$	$Top1op_{it}$	InA_{it}	ROA_{it}	ΔREV_{it}	D/E_{it}	CF_{it}	P_{it-1}^{D-ND}	$STurn_{it-1}$	$R\&D_{it}$	SEO_{it}
$Supsize_{it}$	1																			
$Supid_{it}$	-0.182***	1																		
$Employeep_{ti}$	0.023***	0.071***	1																	
$Supsharep_{it}$	-0.088***	0.165***	0.048***	1																
$Directorp_{it}$	0.022***	-0.009	0.127***	0.005	1															
$Bsize_{it}$	0.356***	-0.138***	-0.062***	-0.050***	0.022***	1														
$Bshareop_{it}$	-0.254***	0.368***	0.096***	0.404***	-0.032***	-0.193***	1													
$Exeshareop_{ti}$	-0.204***	0.293***	0.081***	0.326***	-0.013*	-0.157***	0.788***	1												
$Indep_{it}$	-0.104***	0.097***	0.063***	-0.019***	-0.008	-0.417***	0.091***	0.098***	1											
$TopSOE_{it}$	0.218***	-0.209***	-0.212***	-0.110***	-0.021***	0.176***	-0.229***	-0.177***	-0.052***	1										
$Top1op_{it}$	0.089***	-0.129***	0.227***	-0.171***	0.057***	0.042***	-0.268***	-0.218***	0.028***	-0.306***	1									
InA_{it}	0.257***	-0.139***	0.141***	-0.143***	0.039***	0.274***	-0.239***	-0.204***	0.014**	0.127***	0.334***	1								
ROA_{it}	-0.043***	0.057***	-0.020***	0.105***	-0.034***	0.006	0.157***	0.137***	-0.019***	0.001***	-0.026***	0.030***	1							
ΔREV_{it}	0.100***	-0.053***	0.028***	-0.051***	0.015**	0.111***	-0.077***	-0.064***	0.039***	0.134	0.073***	0.435***	0.130***	1						
D/E_{it}	0.154***	-0.124***	-0.016**	-0.152***	0.020***	0.129***	-0.253***	-0.211***	-0.016**	0.084***	0.128***	0.368***	-0.334***	0.198***	1					
CF_{it}	0.172***	-0.098***	0.044***	-0.070***	0.016**	0.190***	-0.135***	-0.110***	0.024***	0.108***	0.203***	0.544***	0.136***	0.407***	0.102***	1				
P_{it-1}^{D-ND}	0.029***	-0.038***	-0.191***	-0.063***	-0.001	0.011	-0.087***	-0.074***	-0.011	0.186***	-0.126***	-0.000	-0.015**	0.021**	0.010	0.006	1			
$STurn_{it-1}$	0.041***	0.145***	-0.029***	-0.056***	-0.007	0.032***	-0.105***	-0.085***	-0.031***	0.064***	-0.052***	-0.022***	-0.005	0.057***	0.061***	0.036***	0.361***	1		
$R\&D_{it}$	-0.040***	0.074***	0.041***	0.020***	0.002	-0.055***	0.121***	0.060***	0.052***	-0.090***	-0.065***	-0.059***	0.028***	-0.004	-0.145***	-0.030***	-0.045***	-0.037***	1	
SEO_{it}	0.267***	0.050***	0.089***	-0.151***	0.006	-0.019***	0.073***	-0.217***	0.021***	-0.085***	-0.028***	0.087***	0.031***	0.159***	0.055***	-0.030***	-0.050***	-0.060***	0.053***	1

This table presents the correlation between all the independent variables apart from the interaction terms. ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The variables comprise the size of the supervisory board ($Supsize_{it}$); the emolument payment ratio of the supervisory board ($Supaid_{it}$); the employee representative ratio on the supervisory board ($Employeep_{it}$); the shareholding ratio of supervisors ($Supsharep_{it}$); supervisory board independence ($Directorp_{it}$), and other control variables which are the size of the BoD ($Bsize_{it}$); shareholding ratio of the board of directors ($Bshareop_{it}$); shareholding ratio of executives ($Exeshareop_{it}$); independent director percentage ($Indep_{it}$); the largest state-owned shareholder ($TopSOE_{it}$); the shareholding ratio of the largest shareholder ($Top1op_{it}$); firm size (InA_{it}); firm profitability (ROA_{it}); firm growth (ΔREV_{it}); leverage (D/E_{it}); net cash flow (CF_{it}); share turnover ($STurn_{it-1}$); R&D investment ($R\&D_{it}$); semi-mandatary dividend policy (SEO_{it}); and dividend premium (P_{it-1}^{D-ND}).

4.5 Empirical Analysis

To investigate the above hypotheses we expect to determine how the supervisory board structure (size, emolument payments, employee representation, the total shareholding ratio of supervisors and supervisory board dependence) influence dividend policy in China, including the propensity for, the level of and changes to the payment of cash dividends. In addition, the factors that are controlled for, containing measures of the features of Chinese ownership using $\mathrm{Top1OP_{it}}$ and $\mathrm{TopSOE_{it}}$; the board of directors comprising $\mathrm{Bsize_{it}}$, $\mathrm{Bshareop_{it}}$ and $\mathrm{Indep_{it}}$; and firm characteristics, as indicated by $\mathrm{InA_{it}}$, $\mathrm{ROA_{it}}$, $\Delta\mathrm{REV_{it}}$, $\mathrm{D/E_{it}}$, $\mathrm{CF_{it}}$ and $\mathrm{R\&D_{it}}$. $\mathrm{InA_{it}}$, $\mathrm{ROA_{it}}$ and $\Delta\mathrm{REV_{it}}$, are also the measures of the maturity of firms to proxy the life-cycle theory (DeAngelo, DeAngelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007; Denis & Osobov 2008). Stock market turnover and dividend premium are indicated by $\mathrm{STurn_{it-1}}$ and $\mathrm{P_{it-1}^{D-ND}}$, which are the proxies of investor sentiment, as well as capturing catering theory (Baker & Stein 2004; Baker & Wurgler 2006; Li & Lie 2006). Chinese semi-mandatory dividend policy is controlled and indicated by $\mathrm{SEO_{it}}$, a dummy variable.

4.5.1 Supervisory Boards and Propensity for Dividend Payments

This section tests the connection between size ($\mathrm{Supsize_{it}}$), the emolument payment ratio ($\mathrm{Supaid_{it}}$), the ratio of employee representation ($\mathrm{Employeep_{it}}$), the total shareholding ratio of supervisors ($\mathrm{Supsharep_{it}}$) and supervisory board dependence ($\mathrm{Directorp_{it}}$) and the propensity for cash dividend payment. According to the

hypotheses, a smaller (larger) supervisory board has a positive (negative) effect on the initiation of cash dividends because of the weakened supervision function and information asymmetry (Böckli 2009; Hommelhoff & Hopt 2009; Guest 2009; Lublin 2014). Emolument payment could affect the initiation of cash dividends positively as a way of resolving the agency problem, working in a similar way to management compensation (Bertrand & Mullainathan 2001; Bebchuk & Fried 2003). Employee representatives on the supervisory board may not have an influence on the initiation of cash dividend payment because of their lack of support and protection. Higher supervisory board shareholding could positively affect the initiation of cash dividend, considering either personal interests or agency problems (Allen, Bernardo, & Welch 2000; Short, Zhang, & Keasey 2002; Blouin, Ready, & Shackelford 2004). The dependence of supervisory boards, which is measured by the dependent director representatives on the board, could lead to a positive effect on the initiation of cash dividend payment according to agent theory (Burns 2004; Luchetti & Lublin 2004, Adams & Ferreira 2007).

Table 4.4 shows the results of the logit model estimating the relationship between the supervisory board and the propensity of firms to pay cash dividends. The explanatory variables representing hypotheses H4.1a - H4.5a are included individually in columns (1)-(5) as well as jointly in column (5). The coefficient of Supsize_{it} is negative and statistically significant at the 1% level. This indicates that there is a significant negative relationship between the size of the supervisory board (Supsize_{it})

and the decision to pay cash dividends, which is consistent with H4.1a. This result supports the argument that a smaller supervisory board has fewer communication problems, is more flexible and more responsible than a larger one. In other words, a smaller supervisory board can monitor management and better advance the interest of stakeholders (Lipton & Lorsch 1992; Yermack 1996; Eisenberg, Sundgren, & Well 1998; Guest 2009; Lublin 2014). The coefficient of Supaid_{it} is positive (0.048) but not significant, which indicates that there is no significant relationship between the emolument-receipt of supervisory boards (Supaid_{it}) and decisions to pay cash dividends. Hence, this finding is inconsistent with H4.2a. Paying compensation can be a partial remedy to solve the agency problem and to protect shareholder benefits (Murphy 1999). Therefore, emoluments should encourage the members of the supervisory board to work more effectively and influence the payment of cash dividends positively. However, the test results indicate that paying supervisory board emoluments does not incentivise the members and is actually an extra agency cost.

Table 4.4 Logit Model: Supervisory Boards and Propensity for Cash Dividends

Logit Model						
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLE	Model	Model	Model	Model	Model	Model
$Supsize_{it}$	-0.067***					-0.068***
	(-3.584)					(-3.646)
$Supaid_{it}$		0.048				0.036
		(0.626)				(0.469)
$Employeep_{it}$			-0.209*			-0.168
			(-1.879)			(-1.491)
$Supsharep_{it}$				23.828***		24.487***
				(6.063)		(6.204)
$Directorp_{it}$					-0.814	-0.784
					(-1.496)	(-1.424)
$Bsize_{it}$	0.051***	0.040***	0.039***	0.038***	0.040***	0.049***
	(3.674)	(2.961)	(2.902)	(2.785)	(2.987)	(3.499)
$Bsharep_{it}$	2.354***	2.364***	2.391***	2.093***	2.373***	2.044***
	(11.061)	(11.035)	(11.225)	(9.810)	(11.158)	(9.480)
$Indep_{it}$	-0.958**	-1.012**	-0.992**	-0.893*	-0.997**	-0.858*
	(-2.080)	(-2.199)	(-2.157)	(-1.941)	(-2.170)	(-1.852)
$Exesharep_{it}$	1.040***	1.041***	1.049***	0.977***	1.050***	0.981***
	(3.334)	(3.342)	(3.360)	(3.150)	(3.367)	(3.157)
$TopSOE_{it}$	0.074	0.050	0.043	0.052	0.043	0.089*
	(1.600)	(1.069)	(0.934)	(1.143)	(0.933)	(1.852)
$Top1op_{it}$	0.830***	0.841***	0.862***	0.884***	0.845***	0.900***
	(6.740)	(6.843)	(6.978)	(7.191)	(6.870)	(7.255)
InA_{it}	0.744***	0.737***	0.741***	0.740***	0.737***	0.751***
	(32.905)	(32.800)	(32.724)	(32.963)	(32.814)	(33.044)
ROA_{it}	24.247***	24.256***	24.198***	24.124***	24.234***	24.073***
	(33.616)	(33.594)	(33.496)	(33.504)	(33.566)	(33.457)
ΔREV_{it}	-0.380***	-0.378***	-0.375***	-0.375***	-0.377***	-0.373***
	(-10.267)	(-10.195)	(-10.137)	(-10.134)	(-10.177)	(-10.110)
D/E_{it}	-0.486***	-0.488***	-0.490***	-0.485***	-0.488***	-0.485***
	(-23.282)	(-23.342)	(-23.379)	(-23.225)	(-23.336)	(-23.213)
CF_{it}	1.153***	1.133***	1.120***	1.148***	1.130***	1.157***
	(3.835)	(3.772)	(3.725)	(3.823)	(3.763)	(3.852)
$STurn_{it-1}$	-0.406***	-0.407***	-0.423***	-0.403***	-0.408***	-0.414***
	(-7.758)	(-7.778)	(-8.005)	(-7.689)	(-7.800)	(-7.825)
SEO_{it}	-0.033	-0.029	-0.026	-0.028	-0.029	-0.029
	(-0.809)	(-0.718)	(-0.635)	(-0.669)	(-0.704)	(-0.712)
$R\&D_{it}$	0.996	1.024	1.082	1.172	1.056	1.183
	(0.628)	(0.646)	(0.683)	(0.737)	(0.666)	(0.743)
P_{it-1}^{D-ND}	-1.465**	-1.495**	-2.006***	-1.447**	-1.523**	-1.841**
	(-2.130)	(-2.176)	(-2.736)	(-2.103)	(-2.217)	(-2.505)
Constant	-13.195***	-13.192***	-13.102***	-13.300***	-13.165***	-13.328***
	(-19.578)	(-19.522)	(-19.468)	(-19.756)	(-19.571)	(-19.685)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412
Pseudo. R-squared	0.299	0.297	0.297	0.297	0.299	0.297

This table presents the results of logit regression explaining the propensity of firms to pay dividends. The dependent variable, $payer_{it}$, takes a value of 1 for dividend payers and 0 for non-payers. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables, apart from dummy variables, were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses, and *, **, and *** indicate statistically significant relationships at the 10 percent, 5% and 1% levels respectively. The variables comprise the size of the supervisory board ($Supsize_{it}$); the emolument payment ratio of the supervisory board ($Supaid_{it}$); the employee representative ratio on the supervisory board ($Employeep_{it}$); the shareholding ratio of supervisors ($Supsharep_{it}$); supervisory board independence ($Directorp_{it}$), and other control variables which are the size of the BoD ($Bsize_{it}$); the shareholding ratio of the board of directors ($Bshareop_{it}$); the shareholding ratio of executives ($Exeshareop_{it}$); independent director percentage ($Indep_{it}$); the largest state-owned shareholder ($TopSOE_{it}$); the shareholding ratio of the largest shareholder ($Top1op_{it}$); firm size (InA_{it}); firm profitability (ROA_{it}); firm growth (ΔREV_{it}); leverage (D/E_{it}); net cash flow (CF_{it}); share turnover ($STurn_{it-1}$); R&D investment ($R\&D_{it}$); semi-mandatary dividend policy (SEO_{it}); and dividend premium (P_{it-1}^{D-ND}).

The coefficient of $\mathrm{Employeep}_{it}$ is negative and statistically significant at the 10% level when included individually, which indicates that employee representatives ($\mathrm{Employeep}_{it}$) do influence the decision to pay cash dividends. Employee representatives on the supervisory board should play an important role in monitoring, improving governance effectiveness and promoting dividend payments to dampen insider expropriation (La Porta et al. 2002; Faccio, Lang, & Yong 2001; Fauver & Fuerst 2006). However, the result is not significant in column 6, which indicates that employee representatives on Chinese supervisory boards may not have an impact on decisions to cash dividend payments, consistent with H4.3a. The coefficient of $\mathrm{Supsharep}_{it}$ is positive and significant at the 1% level. This indicates that there is a significant positive relationship between supervisory board shareholding ($\mathrm{Supsharep}_{it}$) and the decision to pay cash dividends, giving strong support for H4.4a. We argue that similar to other insider ownership, members of the supervisory board who hold many shares intend to increase their personal wealth through paying cash dividends (Shleifer & Vishny 1986; Allen, Bernardo, & Welch 2000; Short, Zhang, & Keasey 2002; Blouin, Ready, & Shackelford 2004). The coefficient of $\mathrm{Directorp}_{it}$ is negative but not significant, which indicates that there is no significant relationship between the dependent director representatives on the supervisory board ($\mathrm{Directorp}_{it}$) and decisions to pay cash dividends, a finding which does not support H4.5a. This result is actually a good indication that although these members work closely with the board of directors, they will not be influenced by them and can make decisions independently.

Among the other explanatory and control variables, the coefficients of $\mathrm{Bsharep}_{it}$, $\mathrm{Exesharep}_{it}$ and $\mathrm{Top1op}_{it}$ are positive and significant at the 1% level. These results indicate that the shareholdings of directors ($\mathrm{Bsharep}_{it}$), executives ($\mathrm{Exesharep}_{it}$) and the largest shareholder ($\mathrm{Top1op}_{it}$) have a significant positive impact on the propensity to pay cash dividends, which supports the notion that insider ownership supports payment, in consideration of their personal wealth (Shleifer & Vishny 1986; Allen, Bernardo, & Welch 2000; Short, Zhang, & Keasey 2002; Blouin, Ready, & Shackelford 2004) and is consistent with the agency, bird in the hand and clientele effect theory. The coefficients of InA_{it} and ROA_{it} are also positive and significant at the 1% level; and that of $\Delta\mathrm{REV}_{it}$ is negative and significant at the 1% level. These results suggest that firm size (InA_{it}) and profitability (ROA_{it}) have a significant positive relationship with the propensity to payment of cash dividends, while growth opportunity ($\Delta\mathrm{REV}_{it}$) has a significant negative relationship with the same, which means that larger firms with high profitability and lower growth opportunity prefer to pay cash dividends. This can be explained by lifecycle theory (DeAngelo, DeAngelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007; Denis & Osobov 2008). The coefficient of P_{it-1}^{D-ND} is negative and significant at the 1% level, which indicates that the dividend premium (P_{it-1}^{D-ND}) has a significant negative relationship with the payment of cash dividends. This result is inconsistent with the catering theory, suggesting that there is a positive relationship between dividend premium and dividend policy because of the catering mentality (Baker & Wurgler 2006; Li & Lie 2006). However, signalling theory provides

a reasonable explanation for this from another perspective. A negative dividend premium indicates that investors' sentiment is low and that they have less confidence in and expectations of the stock market. As a result, paying cash dividends becomes an effective option to deliver good information and attract investors (Frankfurter & Wood 2002).

In summary, the test results show, first, that there is a significant negative correlation between supervisory board size and payment of cash dividends, which is consistent with H4.1a, the hypothesis that smaller supervisory boards positively affect the decision to pay dividends. Second, there is a significant positive correlation between supervisory board shareholding and decisions on paying cash dividends, which means that H4.4a, the hypothesis that higher supervisory board shareholding positively affects the decision to pay dividends, is accepted. Third, the results of the remaining supervisory board aspects, including emolument payment, employee representation and dependence of Chinese supervisory boards, are insignificant, which indicates that they are irrelevant to decisions to pay cash dividends and consequently the hypotheses H4.2a and H4.5a are rejected, although support for H4.3a is mixed. Finally, the test results of the control variables show that besides the supervisory board, other factors such as firm characteristics and investor demands also influence dividend decisions.

4.5.2 Supervisory Boards and level of Dividend Payment

According to hypotheses H4.1b – H4.5b, the Chinese supervisory board is expected to impact the amount of cash dividends in the same way as it does the propensity for paying cash dividend. In this section, therefore, we focus on the association between size ($\mathrm{Supsize}_{it}$), the emolument payment ratio (Supaid_{it}), the ratio of employee representation ($\mathrm{Employeep}_{it}$), the total shareholding ratio of supervisors ($\mathrm{Supsharep}_{it}$) and supervisory board dependence ($\mathrm{Directorp}_{it}$) and the level of cash dividend payment.

Table 4.5 shows the results assessing the impact of the supervisory board and the level of paying cash dividends. As with Table 4.4, we include the supervisory board variables individually as well as jointly, but the results of control variables, which are broadly similar, are not shown in Table 4.5. The coefficient of $\mathrm{Supsize}_{it}$ is negative and significant at the 5% level. In theory, a smaller supervisory board has fewer communication problems, and is more flexible and responsible than a larger one, which means a smaller board can monitor management and represent stakeholders' benefits better (Lipton & Lorsch 1992; Yermack 1996; Eisenberg, Sundgren, & Wells 1998; Guest 2009; Lublin 2014). However, although this result supports H4.1b, the coefficient is 0.000, which means that this factor actually has a negligible effect on the level of paying cash dividends in practice. The coefficient of Supaid_{it} is positive and significant at the 1% level. This indicates that there is a positive relationship between the receipt of emoluments by the supervisory board (Supaid_{it}) and the level of cash dividends. Theoretically, when a firm decides to pay a cash dividend, a supervisory board which

receives compensation will stand for shareholders' wealth and influence the level of cash dividend payment positively. However, although the result supports H4.2b, the coefficient estimate of 0.001 indicates that the marginal impact of this factor is small in practice.

Table 4.5 OLS Model: Supervisory Boards and Level of Cash Dividend Payment

OLS Regression Model						
VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)
$Supsize_{it}$	-0.000**					-0.000**
	(-2.333)					(-2.293)
$Supaid_{it}$		0.001**				0.001**
		(2.160)				(2.096)
$Employeep_{it}$			-0.001			-0.000
			(-0.944)			(-0.732)
$Supsharep_{it}$				0.064***		0.066***
				(3.557)		(3.633)
$Directorp_{it}$					-0.004*	-0.004*
					(-1.727)	(-1.706)
Constant	-0.006*	-0.007*	-0.006*	-0.007*	-0.006*	-0.007**
	(-1.828)	(-1.952)	(-1.743)	(-1.959)	(-1.812)	(-2.074)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412
R-squared	0.354	0.353	0.353	0.353	0.354	0.354
Adj. R-squared	0.353	0.353	0.353	0.353	0.353	0.353

This table presents the results of the OLS regressions of the level at which firms pay dividends. The dependent variable $Dividend_{it}$ is measured as the amount of cash dividends divided by the book value of assets. The sample period is from 2007 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy variables were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the size of the supervisory board ($Supsize_{it}$); the emolument payment ratio of the supervisory board ($Supaid_{it}$); the employee representative ratio on the supervisory board ($Employeep_{it}$); the shareholding ratio of supervisors ($Supsharep_{it}$); and supervisory board independence ($Directorp_{it}$). The variable control contains all the same control variables as in the regressions.

The coefficient of $\mathrm{Employeep}_{it}$ is statistically insignificant, consistent with H4.3b. The coefficient of $\mathrm{Supsharep}_{it}$ is positive and significant at the 1% level. This indicates that there is a significant positive relationship between supervisory board shareholding ($\mathrm{Supsharep}_{it}$) and the level of paying cash dividends, which is consistent with H4.4b. This means that similar to insider ownership, members of the supervisory board who holding a considerable number of shares will attempt to increase their personal wealth by paying cash dividends (Shleifer & Vishny 1986; Allen, Bernardo, & Welch 2000; Short, Zhang, & Keasey 2002; Blouin, Ready, & Shackelford 2004). The coefficient of $\mathrm{Directorp}_{it}$ is negative and statistically significant at the 10% level, and the marginal impact on the level of cash dividend payment is small.

Overall, although the impact of supervisory board size, emolument payment on the level of dividend payment is small, their statistical significance indicates that hypotheses H4.1b and H4.2b are supported. H4.3b, the hypothesis that employee representatives on a supervisory board do not significantly affect the level of cash dividends, is also supported because the coefficient of employee representatives is insignificant. Similarly, there is support for H4.4b, the hypothesis that higher supervisory board shareholding positively affects the level of cash dividends, is strong and the marginal impact of this variable is significantly positive. However, support for H4.5b is mixed.

4.5.3 Supervisory Boards and Changes in Dividend Payment

According to hypotheses H4.1c - H4.5c, the Chinese supervisory board is expected to also influence changes in cash dividend payments in the same way as it does on the propensity for and level of such payments. In this section, we focus on the association between size (Supsize_{it}), the emolument payment ratio (Supaid_{it}), the ratio of employee representation (Employeep_{it}), the total shareholding ratio of supervisors (Supsharep_{it}) and supervisory board dependence (Directorp_{it}), and the changes in cash dividend payment.

Table 4.6 shows the results assessing the impact of supervisory board variables on changes in cash dividend payments. The effects of Supsize_{it}, Supaid_{it}, Supsharep_{it}, and Directorp_{it} are all insignificant. Only the coefficient of Supsharep_{it}, being positive (0.026) and significant at the 5% level, has an impact on the change in dividend payments. The results indicate that the supervisory board is irrelevant to cash dividend changes apart from the shareholding ratio of supervisors, which is consistent with clientele effect theory (Shleifer & Vishny 1986; Allen, Bernardo, & Welch 2000; Short, Zhang, & Keasey 2002; Blouin, Ready, & Shackelford 2004). Thus, only H4.4c, the hypothesis that higher supervisory board shareholding is associated with increases in dividend payments, is supported (apart from H4.3c which states an insignificant impact). There are several reasons why the supervisory board does not determine changes to the dividend payment. First, Chinese supervisory boards lack power and work inefficiently because of their weak protection and imperfect regulations. In addition, companies would like to maintain a stable dividend policy to show their profitability and attract

outside investors (Lintner 1962; Fama 1974; Baker & Powell 2000; Omet 2004). Moreover, firms change their dividend payments as a result of other factors, such as shareholder benefits, firm characteristics and investor demands.

Table 4.6 OLS Model: Supervisory Boards and Changes in Cash Dividend Payment

OLS Regression Model						
VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)
$Supsize_{it}$	0.000					-0.000
	(0.145)					(-0.076)
$Supaid_{it}$		-0.009				-0.009
		(-1.008)				(-1.063)
$Employeep_{it}$			-0.139			-0.151
			(-0.406)			(-0.443)
$Supsharep_{it}$				0.026**		0.026**
				(2.115)		(2.107)
$Directorp_{it}$					0.029	0.015
					(0.472)	(0.246)
Constant	-0.131*	-0.125*	-0.139**	-0.130*	-0.131*	-0.132*
	(-1.884)	(-1.805)	(-1.998)	(-1.869)	(-1.883)	(-1.897)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412
Adj. R-squared	0.016	0.017	0.017	0.016	0.016	0.017

This table presents the results of the OLS regression of the change in firms' cash dividends. The dependent variable ΔD_{it} represents the change in dividends, either upwards or downwards. The sample period is from 2007 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy variables were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the size of the supervisory board ($Supsize_{it}$); the emolument payment ratio of supervisory board ($Supaid_{it}$), the employee representative ratio on the supervisory board ($Employeep_{it}$), the shareholding ratio of supervisors ($Supsharep_{it}$), the supervisory board independence ($Directorp_{it}$). The variable control contains all the same control variables as in the regressions.

4.5.4 Robustness Check

This section presents two robustness tests to assess the consistency of the results of the association between cash dividend payment and Chinese supervisory boards.

In the first robustness test, we first replaced the logit and OLS models with probit and tobit models, respectively. In other words, to estimate the propensity to pay dividend payments, the use of probit replaces logit estimation as the dependent variable is dichotomous. To estimate the effects on the level and changes in dividend payments, the use of tobit replaces OLS estimation. The results of this exercise are presented in Tables 4.7, 4.8 and 4.9, to be compared with the results of Tables 4.4, 4.5 and 4.6, respectively. The results are consistent since the outcomes of the main hypothesis remain the same as the earlier results. For instance, the effects of supervisory broad size and total supervisory shareholding are significant, confirming support for hypotheses H4.1a and H4.4a, as before, while the effects of emolument payment and dependence of Chinese supervisory boards are insignificant, confirming rejection of H4.2a and H4.5a, while there is mixed support for H4.3a. Similarly, the tobit results confirm the outcomes of the OLS results.

Table 4.7 Probit Model: Supervisory Boards and Propensity for Cash Dividend

Probit Model						
VARIABLE	(1) Model	(2) Model	(3) Model	(4) Model	(5) Model	(6) Model
$Supsize_{it}$	-0.042***					-0.043***
	(-3.843)					(-3.908)
$Supaid_{it}$		0.024				0.014
		(0.532)				(0.319)
$Employeep_{it}$			-0.118*			-0.092
			(-1.829)			(-1.408)
$Supsharep_{it}$				13.538***		13.895***
				(6.473)		(6.612)
$Directorp_{it}$					-0.470	-0.452
					(-1.475)	(-1.403)
Constant	-7.639***	-7.631***	-7.579***	-7.710***	-7.620***	-7.720***
	(-19.810)	(-19.727)	(-19.661)	(-20.006)	(-19.781)	(-19.949)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412
Pseudo. R-squared	0.295	0.293	0.292	0.293	0.295	0.295

This table presents the results of the probit regression of the propensity of firms to pay dividends. The dependent variable $payer_{it}$ takes a value of 1 for dividend payers and 0 for non-payers. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from the dummy variables were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and *, **, and *** indicate statistically significant relationships at the 10%, 5% and 1% levels respectively. The independent variables comprise the size of the supervisory board ($Supsize_{it}$); the emolument payment ratio of the supervisory board ($Supaid_{it}$); the employee representative ratio on the supervisory board ($Employeep_{it}$); the shareholding ratio of supervisors ($Supsharep_{it}$); and supervisory board independence ($Directorp_{it}$). The variable control contains the same control variables as in the regressions.

Table 4.8 Tobit Model: Supervisory Boards and Cash Dividend Level

Tobit Model						
VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)
$Supsize_{it}$	-0.000**					-0.000**
	(-2.135)					(-2.106)
$Supaid_{it}$		0.001**				0.001**
		(2.094)				(2.029)
$Employeep_{it}$			-0.001			-0.000
			(-0.979)			(-0.763)
$Supsharep_{it}$				0.064***		0.066***
				(4.102)		(4.194)
$Directorp_{it}$					-0.004	-0.004
					(-1.374)	(-1.363)
Constant	-0.006*	-0.007*	-0.006*	-0.007*	-0.006*	-0.007**
	(-1.828)	(-1.952)	(-1.743)	(-1.959)	(-1.812)	(-2.074)
Variables Control	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.084	0.084	0.084	0.084	0.084	0.084

This table presents the results of the Tobit regressions of the level at which firms pay dividends. The dependent variable $Dividend_{it}$ is measured as the amount of cash dividends divided by the book value of assets. The sample period is from 2007 to 2016, consisting of all listed companies that issued A shared on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy variables were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the size of the supervisory board ($Supsize_{it}$); the emolument payment ratio of the supervisory board ($Supaid_{it}$); the employee representative ratio on the supervisory board ($Employeep_{it}$); the shareholding ratio of supervisors ($Supsharep_{it}$); and supervisory board independence ($Directorp_{it}$). The variable control contains the same control variables as in the regressions.

Table 4.9 Tobit Model: Supervisory Boards and Changes in Cash Dividend Payments

Tobit Model VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)
$Supsize_{it}$	0.000					-0.000
	(0.143)					(-0.074)
$Supaid_{it}$		-0.009				-0.009
		(-1.002)				(-1.058)
$Employeep_{it}$			0.026**			0.026**
			(2.138)			(2.132)
$Supsharep_{it}$				-0.139		-0.151
				(-0.447)		(-0.487)
$Directorp_{it}$					0.029	0.015
					(0.473)	(0.247)
Constant	-0.131*	-0.125*	-0.139**	-0.130*	-0.131*	-0.132*
	(-1.884)	(-1.805)	(-1.998)	(-1.869)	(-1.883)	(-1.897)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.050	0.049	0.049	0.049	0.050	0.050

This table presents the results of the Tobit regression of the change in firms' cash dividends. The dependent variable ΔD_{it} represents the changes in dividends, either upwards or downwards. The sample period is from 2007 to 2016, consisting of all listed companies that issued A shared on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy variables were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses, and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the size of the supervisory board ($Supsize_{it}$); the emolument payment ratio of the supervisory board ($Supaid_{it}$); the employee representative ratio on the supervisory board ($Employeep_{it}$); the shareholding ratio of supervisors ($Supsharep_{it}$); and supervisory board independence ($Directorp_{it}$). The variable control contains the same control variables as in the regressions.

In the second robustness test, we replaced the main variables representing aspects of the supervisory boards. For example, the emolument payment ratio ($Supaid_{it}$) was replaced by a dummy variable of emolument payment (Dum_Supaid_{it}), equal to 1 when one or more members of the supervisory board were paid, otherwise 0. Similarly, the ratio of employee representation ($Employeep_{it}$), the total shareholding ratio of supervisors ($Supsharep_{it}$) and supervisory board dependence ($Directorp_{it}$) were replaced by dummy variables of employee representation ($Dum\_Employeep_{it}$), shareholders on the supervisory board ($Dum\_Supsharep_{it}$) and dependent members of the supervisory board ($Dum\_Directorp_{it}$). The same logit and OLS regressions were

run with the replaced variables to further verify whether these factors had a connection with dividend policy decisions.

The results of this exercise are shown in Tables 4.10, 4.11 and 4.12, and the findings are consistent with the previous results pointing to the same conclusions. For example, the effects of emolument payment and employee representatives are insignificant, so these factors of the Chinese supervisory boards do not influence dividend policy, while other factors such as supervisory board size and members who are also shareholders encourage payments of cash dividends.

Table 4.10 Robustness: Supervisory Boards and Propensity for Cash Dividends

Logit Model						
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLE	Model	Model	Model	Model	Model	Model
$Supsize_{it}$	-0.068***					-0.073***
	(-3.686)					(-3.944)
Dum_Supaid_{it}		0.046				0.017
		(0.607)				(0.216)
$Dum\_Employeep_{it}$			0.081			0.098
			(1.264)			(1.519)
$Dum\_Supsharep_{it}$				0.135***		0.146***
				(3.278)		(3.523)
$Dum\_Directorp_{it}$					-0.149	-0.147
					(-1.383)	(-1.355)
Constant	-17.012***	-17.008***	-16.941***	-16.895***	-16.998***	-16.894***
	(-32.418)	(-32.301)	(-32.273)	(-32.145)	(-32.407)	(-31.936)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412
Pseudo. R-squared	0.295	0.295	0.295	0.295	0.295	0.296

This table presents the results of the logit regression of the propensity of firms to pay dividends. The dependent variable $payer_{it}$ takes a value of 1 for dividend payers and 0 for non-payers. The sample period is from 2008 to 2016, consisting of all listed companies that issues A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy variables were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and *, **, and *** indicate statistically significant relationships at the 10%, 5% and 1% levels respectively. The independent variables comprise the size of the supervisory board ($Supsize_{it}$); supervisory board emolument payment dummy (Dum_Supaid_{it}); employee representation on the supervisory board dummy ($Dum\_Employeep_{it}$); shareholding of supervisors dummy ($Dum\_Supsharep_{it}$), and dependent member dummy ($Dum\_Directorp_{it}$). The variable control contains the same control variables as in the regressions.

Table 4.11 Robustness: Supervisory Boards and Cash Dividend Level

OLS Model

VARIABLE	(1) Model	(2) Model	(3) Model	(4) Model	(5) Model	(6) Model
$Supsize_{it}$	-0.000**					-0.000**
	(-2.414)					(-2.400)
Dum_Supaid_{it}		0.001**				0.001**
		(2.434)				(2.208)
$Dum\_Employeep_{it}$			-0.001*			-0.001*
			(-1.886)			(-1.760)
$Dum\_Supsharep_{it}$				0.001***		0.001***
				(2.826)		(2.803)
$Dum\_Directorp_{it}$					-0.001	-0.001
					(-1.516)	(-1.363)
Constant	-0.006**	-0.007***	-0.007***	-0.006**	-0.006**	-0.007***
	(-2.542)	(-2.723)	(-2.686)	(-2.357)	(-2.553)	(-2.716)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412
Adj. R-squared	0.355	0.355	0.355	0.355	0.355	0.356

This table presents the results of the OLS regressions of the level at which firms pay dividends. The dependent variable $Dividend_{it}$ is measured as the amount of cash dividends divided by the book value of assets. The sample period is from 2007 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy variables wre winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the size of the supervisory board ($Supsize_{it}$) supervisory board emolument payment dummy (Dum_Supaid_{it}); employee representation on the supervisory board dummy ($Dum\_Employeep_{it}$); shareholding of supervisors dummy ($Dum\_Supsharep_{it}$); and dependent member dummy ($Dum\_Directorp_{it}$). The variable control contains the same control variables as in the regressions.

Table 4.12 Robustness: Supervisory Boards and Changes in Cash Dividend Payments

OLS Model

VARIABLE	(1) Model	(2) Model	(3) Model	(4) Model	(5) Model	(6) Model
$Supsize_{it}$	0.000					-0.000
	(0.156)					(-0.045)
Dum_Supaid_{it}		-0.009				-0.009
		(-1.039)				(-1.110)
$Dum\_Employeep_{it}$			0.018**			0.018**
			(2.453)			(2.454)
$Dum\_Supsharep_{it}$				0.003		0.003
				(0.582)		(0.655)
$Dum\_Directorp_{it}$					0.005	0.004
					(0.438)	(0.340)
Constant	0.007	0.012	0.016	0.009	0.008	0.023
	(0.146)	(0.242)	(0.323)	(0.179)	(0.154)	(0.472)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412
Adj. R-squared	0.016	0.016	0.017	0.016	0.016	0.017

This table presents the results of the OLS regression of changes in firms' cash dividends. The dependent variable ΔD_{it} represents the changes in dividends, either upwards or downwards. The sample period is from 2007 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from the dummy variables wre winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the size of the supervisory board ($Supsize_{it}$); supervisory board emolument payment dummy (Dum_Supaid_{it}); employee representation on the supervisory board dummy ($Dum\_Employeep_{it}$); shareholding of supervisors dummy ($Dum\_Supsharep_{it}$); and dependent member dummy ($Dum\_Directorp_{it}$). The variables control contains the same control variables as in regressions.

4.6 Conclusion

This chapter has investigated the impact of the supervisory board structure on the dividend payment decisions of Chinese listed firms. Some of the two-tier Chinese supervisory board factors have been proven to impact decisions on and the level of cash dividend policy in various ways. The size of the supervisory board has a negative impact on the decision to pay cash dividends, which is consistent with the previous view that a smaller supervisory board helps more to monitor management's behaviour and to stand up for shareholders' benefits (Wu 2004; Guest 2009; Lublin 2014), while the emolument-receiving ratio influences the level of cash dividend positively because of the incentives the members received to stand up for shareholders' benefits (Bertrand & Mullainathan 2001; Bebchuk & Fried 2003). The shareholding ratio of the supervisory board has a significant positive impact on the decision to pay cash dividends.

The research has also found that Chinese supervisory boards have problems and implications with their functions. First, employee representatives show no association with dividend policy and are unable to represent stakeholders' benefits and monitor management decisions. Second, members who are also shareholders may influence dividend policy based on their own benefits (Shleifer & Vishny 1986; Allen, Bernardo, & Welch 2000). To improve the function and effectiveness of the Chinese supervisory board, first, the size of the supervisory board should be small because a larger board

could experience increased communication problems and a reduced ability to control management (Lipton & Lorsch 1992; Yermack 1996; Eisenberg, Sundgren, & Well 1998; Guest 2009; Lublin 2014). Second, employee representatives should be protected and supported by laws and professional organizations such as unions so they can work more efficiently. Finally, the independence and power of the Chinese supervisory board should be improved. So far, the "two-tier system" in China is effectively a one-tier system in nature. Chinese supervisory boards are very dependent and lack power because they can only act as counsellors and give comments on and criticise management decisions. They do not have any election or voting rights concerning the board of directors and its decisions. The Chinese supervisory board can only report to shareholders and wait for solutions when they find problems with a firm's operation and decisions, which is the reason why it works less efficiently. Overall, the finding of this chapter indicate what the Chinese "two-tier system" needs to do is not only to copy the board structure from other experienced countries, but also to improve and protect its functions by enhancing its own rights and power, and the integrity of relevant regulations.

As a limitation, this study did not seek to address the problem of potential endogeneity or reverse causality. However, in defense, it could be argued that this problem does not seriously arise here. In principle, dividend policy is influenced by the independent variables, such as the features of the supervisory board, but dividend policy may not influence the structure or existence of the supervisory board simultaneously. The supervisory board exists by law and generally evolves independently of dividend

policy decisions. Furthermore, in our empirical analysis, we control for unobservable industry-level effects, which to some extent alleviates the potential endogeneity or reverse causality concerns.

Chapter 5

INVESTOR SENTIMENT, OWNERSHIP STRUCTURE AND DIVIDEND POLICY

5.1 Introduction

This chapter presents a relevant empirical analysis of the relationship between investor sentiment, corporate ownership and dividend policy, including decisions on and changes to the cash dividend, based on the sample of Chinese listed firms. Investor sentiment is defined broadly as the general attitude of investors towards the financial market or particular security. There are many proxies related to sentiment and used to describe investor sentiment, such as investor mood, closed-end fund discount, share turnover and first-day returns on IPOs (Baker & Stein 2004; Baker & Wurgler 2007). Previous research has confirmed how investor sentiment influences dividend policy. Some studies suggest a positive relationship between investor sentiment and dividend payment consisting with the reference of the catering theory, while others propose that there is a negative relationship, as confirmed by signalling theory (Frankfurter & Wood 2002; Baker & Wurgler 2004; Ferris, Sen, & Yui 2006).

Corporate ownership and dividend policy have been extensively explored. For example, some research has focused on how different types of ownership, such as state, institution or managerial, affect dividend payment (e.g., Short, Zhang, & Keasey 2002; Farinha 2003; Lee & Xiao 2004; Amihud & Li 2006; Kumar 2006; Wang, Manry, & Wandler 2011; Lam, Sami, & Zhou 2012; Bradford, Chen, & Zhu 2013). Some studies

have examined the relationship between the degree of ownership concentration and dividend payout policy. The distribution of stock among shareholders could cause agency problems between majority and minority shareholders, which significantly influences dividend payment (e.g., Johnson et al. 2000; Dyck & Zingales 2004; Truong & Heaney 2007; Lin, Chiou, & Chen 2010; Wellalagea, Fauzi, & Wang 2014; Su et al. 2014).

Although the relationship between either investor sentiment and dividend policy or corporate ownership and dividend policy has been widely studied, the relationship between the three factors has not been explored. According to agency theory, the controlling inside shareholders could expropriate not only minority shareholders but also outside ones by manipulating dividend policy (Berkman, Cole, & Fu 2009; Jiang, Lee, & Yue 2010; Peng, Wei, & Yang 2011). However, they still need to be concerned with investors' requirements and firm value (Truong & Heaney 2007). In addition, investor sentiment reflects investors' demands, as well as influencing dividend payment. As a result, it is questioned whether investor sentiment influences the largest shareholders' decisions on cash dividend payment and this study aims to research this topic. Moreover, we develop the research among Chinese-listed firms with highly concentrated state-controlled ownership, meaning that many Chinese listed firms' share distributions are not only highly concentrated but also state-owned. Hence, we also test whether investor sentiment influences SOEs' decisions on cash dividends.

The aim of this chapter is, therefore, to examine the relationship between investor sentiment, ownership and decisions on dividend policy. We estimate logit/probit and OLS/tobit models to investigate how the concentrated and state ownership impact the decisions on and changes to cash dividend payments under the influence of investor sentiment. The results and conclusions will be developed in the following sections.

The remainder of this chapter is organised as follows. Section 5.2 reviews the literature and develops the hypotheses. Section 5.3 briefly describes the models and variables for the regressions, while Section 5.4 introduces the sample selection and discusses the descriptive statistics. Section 5.5 discusses the empirical findings and robustness analyses and section 5.6 draws the conclusions.

5.2 Literature Review and Hypothesis Development

The demand for dividends by investors varies over time and market sentiment tends to influence their payment (Long 1978). For example, investors may prefer safe dividend-paying stocks in low-sentiment periods such as recessions, while in good times such as booms, investors may prefer risky stocks (Baker & Wurgler 2004; Gemmill 2005). Acording to the catering theory, when investors look forward to a cash dividend payment and a dividend premium, firms would like to cater to their demands (Baker & Wurgler 2004; Li & Lie 2006; Ferris, Sen, & Yui 2006). The high sentiment means that investors are optimistic about the stock market and they may overprice stocks. Firms prefer to pay cash dividends to attract cash flow and resources from outside. Conversely,

if there is low sentiment, the attitude by investors towards the stock market is pessimistic, which leads to an undervaluation of stock prices. In this situation, firms prefer a more efficient internal capital market that helps to reduce external financing constraints and reduce cash dividend payments. As a result, high sentiment could influence dividend policy positively.

However, there may be a negative correlation between investor sentiment and dividend policy. According to signalling theory, a dividend payment can convey relevant information, such as firms' true value and profitability and firms can thus obtain cash flow from investors (Bhattacharya 1979; Miller & Rock 1985; Frankfurter & Wood 2002). When sentiment is low, investors have no confidence in or expectations of the stock market, and the cash dividend becomes the primary source of income. Companies will tend to pay a cash dividend to deliver good signalling and attract investors. As a result, investor sentiment could have either a positive or negative impact on dividend policy.

With regard to ownership, theoretically, there is a positive relationship between state ownership and dividend policy. Some researchers have explained this phenomenon by tunnelling theory, arguing that cash dividend policy is dominated by the tunnelling incentive of controlling shareholders' interests (Lee & Xiao 2004; Chen, Jian, & Xu 2009). State shares in China can only be transferred with special approval by the government, which has the same effect as the transfer of a portion of non-tradable

shares from the state to other shareholders. As a result, cash dividends could be a vehicle for tunnelling in companies with state-controlling shareholders instead of alleviating agency problems (Lee & Xiao 2004; Cheng, Fung, & Leung 2009). Other research explains the positive phenomenon of state-controlling ownership and dividend policy by the capital constraint hypothesis. It concludes that non-state-owned enterprises (NSOEs) pay fewer dividends than state-owned ones (SOEs) because NSOEs are more capital constrained. In China, banks are known for their soft lending policy toward SOEs and lending bias against NSOEs. Therefore, privately controlled firms in China find it more difficult to raise long-term debt capital compared to SOEs (Brandt & Li 2003; Fan et al. 2008). At the same time, rights offerings or undertaking of SEOs is tightly restricted for NSOEs but not SOEs, because the CSRC is a sister agency to the Chinese banks whose political ties are both formally and informally significant, and it accepts SOEs that do not meet the requirement for an exception on the application if there is an acceptable explanation (Green 2003). As a result, a greater constraint on debt capital and external equity capital puts NSOEs under more pressure regarding internally generated funds, which leads to fewer dividends being paid by NSOEs than SOEs (Bradford, Chen, & Zhu 2013).

However, in practice, as the state is usually also the largest shareholder in Chinese firms, this could have a negative influence on dividend policy. First, according to agency theory, majority control gives the larger shareholders considerable power and discretion over dividend decisions and payout ratios, which means when the controlling

shareholder expropriates minority shareholders, other shareholders will not challenge this (Zingales 1994, 1995; Nenova 2000; Dyck & Zingales 2004). Additionally, a controlling shareholder has a strong incentive to maximise private benefits rather than shareholder wealth by occupying firm resources, which is referred to as tunnelling (Johnson et al. 2000; Faccio, Lang, & Young 2001). As a result, under the weak legal protection and corporate governance of Chinese firms, the controlling shareholders are more likely to expropriate wealth from minority shareholders and outside investors and siphon off firms' resources by related-party transactions, which has a negative effect on cash dividends (Berkman, Cole, & Fu 2009; Jiang, Lee, & Yue 2010; Peng, Wei, & Yang 2011). Second, corporate pyramid ownership in China also affects dividend policy. This ownership structure is popular around the world because of the private benefits of control rights and is more prevalent in countries with weaker laws and undeveloped economic environments (La Porta, Lopez-de-Silanes, & Shleifer 1999; Claessens, Djankov, & Lang, 2000; Attig, Gadhoum, & Lang 2003). A pyramid structure can establish an efficient internal capital market that helps to reduce external financing constraints (Manos, Murinde, & Green, 2012). The internal capital market within the pyramids of firms becomes stronger in its allocation of funds across units as the pyramid size increases; in other words, a longer control chain enables higher utilisation of investable funds, but lower surplus funds and cash dividends (Stein 1997; Bradford, Chen, & Zhu 2013). Finally, as the capital constraint is already restricted to NSOEs but loses

to the SOEs, SOEs could pay fewer cash dividends than NSOEs because the latter has to attract more outside investors to raise fund resources.

Previous literature has also explored the important relationship between ownership concentration and dividend policy. Majority control gives larger shareholders considerable power and discretion over dividend decisions and payout ratios (Gugler 2003). One agency problem is that the controlling shareholders are more likely to expropriate minority shareholders and to be less likely to be challenged by other shareholders (Zingales 1994, 1995; Nenova 2000; Dyck & Zingales 2004). When there is a large divergence between control rights and cash flow rights, if large shareholders fail to realise capital gains from free trading and their sole investment income source is cash dividends, they will have a strong incentive to ask for large cash dividends, which leads to firm's underinvestment and lower value. In cases where the control rights are consistent with the cash flow rights, the major shareholder should be inclined to choose the lowest cost and most legally protected way to realise its interests. As a result, the controlling shareholder may infringe on the interests of the minority shareholders by paying a cash dividend. This preference for dividends may be even stronger in emerging markets with weak investor protection (Mitton 2004).

Investor sentiment could also enhance or reduce the influence of state ownership or majority shareholders on dividend policy. First, as mentioned above, investor sentiment could influence state ownership or more significant shareholders to adjust dividend policy as a response to catering incentives or to deliver a signal. Second, the

larger shareholders need to be concerned with investors' requirements in case of a lack of free cash flow and the risk of underinvestment (Truong & Heaney 2007). Majority control gives the larger shareholders considerable power and discretion over dividend decisions and payout ratios (Zingales 1994, 1995; Nenova 2000; Dyck & Zingales 2004), which means a controlling shareholder has a strong incentive to maximise private benefits rather than shareholder wealth by occupying firm resources (La Porta, Lopez-de-Silanes, & Shleifer 1999; Johnson et al. 2000; Faccio, Lang, & Young 2001). The same issue of the remaining firms' values and resources is also faced by state-controlling ownership. As a result, investor sentiment can be viewed as an approach to restricting the behaviour of controlling shareholders and protecting the benefits of smaller shareholders and outsiders.

In view of the above considerations, the following hypotheses are proposed:

H5.1a: The propensity of SOEs to pay cash dividends is affected by investor sentiment

H5.1b: Investor sentiment affects SOEs on changes of cash dividends.

H5.2a: The propensity of firms with large shareholder concentration to pay cash dividend is affected by investor sentiment

H5.2b: Investor sentiment affects firms with large shareholder concentration on changes of cash dividends.

5.3 Methodology

The data selection procedure is outlined in Section 3.2, Chapter 3. The model specifications and detailed definitions of the variables employed are given in Section 3.3 of Chapter 3. Here we briefly link the hypotheses to the model specifications and the variables of interest.

For testing hypotheses H5.1a and H5.2a, we estimate the logit regression model:

$$Logit(Payer_{it} = 1) = \alpha_0 + X_{it} + X'_{it} + X\_X'_{it} + \sum_{k=4}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \quad (5.1)$$

For testing hypotheses H5.2a and H5.2b, we estimate the model:

$$\Delta D_{it} = \alpha_0 + X_{it} + X'_{it} + X\_X'_{it} + \sum_{k=4}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \quad (5.2)$$

where:

α_0 *is the constant term*

X_{it} *is the index variable of investor sentiment* ($Sentiment_{it}$)

X'_{it} *is the variable of ownership: either state ownership* ($TopSOE_{it}$) *or the shareholding ratio of the largest shareholder* ($Top1op_{it}$)

$X\_X'_{it}$ *is the appropriate interaction term:* SE_TopSOE_{it} *or* SE_Top1op_{it}

$\sum_{k=4}^{n} \beta_k Controls_{itk}$ *is the set of control variables: the size of the BoD* ($Bsize_{it}$); *the shareholding ratio of the board of directors* ($Bshareop_{it}$); *independent director percentage* ($Indep_{it}$); *size of the supervisory board* ($Supsize_{it}$); *the total shareholding ratio of supervisors* ($Supsharep_{it}$); *firm size* (InA_{it}); *firm profitability* (ROA_{it}); *firm growth* (ΔREV_{it}); *leverage* (D/E_{it}); *net cash flow* (CF_{it}); *R&D investment* ($R\&D_{it}$); *and semi-mandatory dividend policy* (SEO_{it}).

The dependent variable in specification (5.1) is a dummy variable representing the dividend decision (defined as $Payer_{it}$, *or, as alternatives,* $Initiation_{it}$ *or* $Continue_{it}$). The dependent variable in specification (5.2) is the change in cash dividend payment (defined as ΔD_{it}). The precise definitions of the dependent, explanatory and control variables employed are detailed in section 3.4 of chapter 3.

5.3.1 Data Description and Summary Statistics

Table 5.1 shows the summary statistics of the dependent and main independent variables. The mean value of $\mathrm{Payer}_{\mathrm{it}}$ is 0.656 and the median value is 1.000, which indicates that more than half of the listed firms paid cash dividends between 2008 and 2016. The mean value of $\mathrm{Initiation}_{\mathrm{it}}$ is 0.085 and the median value is 0.000, while the mean value of $\mathrm{Continue}_{\mathrm{it}}$ is 0.572 and the median value 1.000. The results show that amongst the payers, most are firms that previously paid dividends and continued to do so. $\Delta \mathrm{D}_{\mathrm{it}}$ presents the changes in dividend payment, whose mean value is -0.004 and median value 0.000, which indicates the firms paying cash dividends normally maintain a stable dividend policy.

Table 5.1 Summary Statistics for Chapter 5

Panel A: Dependent Variables						
VARIABLE	N	Mean	Median	Std. Dev.	Min	Max
Payer_{it}	18,412	0.656	1.000	0.475	0.000	1.000
$\mathrm{Initiation}_{it}$	18,412	0.085	0.000	0.280	0.000	1.000
$\mathrm{Continue}_{it}$	18,412	0.572	1.000	0.495	0.000	1.000
ΔD_{it}	18,412	-0.004	0.000	0.287	-1.136	0.712
Panel B: Sentiment Indexes						
VARIABLE	N	Mean	Median	Std. Dev.	Min	Max
$\mathrm{Sentiment}_{it}$	18,412	10.562	10.801	0.623	9.411	11.512
STurn_{it-1}	18,412	8.239	8.169	0.392	7.710	8.987
IPON_{it}	18,412	13.945	14.134	0.899	12.077	15.269
IPOR_{it-1}	18,412	0.474	0.408	0.282	0.242	1.357
ES_{it}	18,412	0.716	0.717	0.007	0.700	0.727
P_{it-1}^{D-ND}	18,412	-0.099	-0.102	0.031	-0.147	-0.032
TopSOE_{it}	18,412	0.446	0.000	0.497	0.000	1.000
$\mathrm{Top1op}_{it}$	18,412	0.227	0.200	0.180	0.003	0.632

This table presents summary statistics for all the variables used for the regressions. The sample period is from 2008 to 2016 and the sample comprises all listed firms that issued A-shares on the Shenzhen and Shanghai Stock Exchanges. All the variables, apart from dummy data, were also winsorized at the 1st and 99th percentile values. The dependent variable Payer_{it} equals 1 when a firm decided to pay cash dividends, and 0 otherwise; $\mathrm{Initiation}_{it}$ equals 1 when a listed firm did not pay a cash dividend in the previous year t-1, but decided to do so in year t, and 0 otherwise. $\mathrm{Continue}_{it}$ equals 1 when a listed firm paid a cash dividend in the previous year t-1 and continued to pay one in year t, and 0 otherwise. ΔD_{it} represents changes to the cash dividend. The independent variables include investor sentiment ($\mathrm{Sentiment}_{it}$); share turnover (STurn_{it-1}); IPO number (IPON_{it}); the first-day returns on IPOs (IPOR_{it-1}); the equity share ratio (ES_{it}); the dividend premium (P_{it-1}^{D-ND}); the largest state-owned shareholder (TopSOE_{it}); and the shareholding ratio of the largest shareholder ($\mathrm{Top1op}_{it}$).

As for investor sentiment, the difference between the mean value (10.562) and the median value (10.801) is quite small, which indicates the volatility of investor sentiment is gentle and its value changes only slightly during the statistical period. The mean value of IPO number (IPON_{it}) is 13.945 and its performance also shows no major fluctuations. The mean value of the equity share ratio (ES_{it}) is 0.716, which is high and indicates low stock market returns (Baker & Wurgler 2000; Yu & Yuan 2011). The mean value of the largest state shareholder (TopSOE_{it}) is 0.446, which means that nearly half of the listed firms held a relatively large number of shares or were even controlled by the state. The mean value of the shareholding ratio of the largest shareholders ($\mathrm{Top1op}_{it}$) is 0.227,

indicating that the degree of concentration of the largest shareholder is high and could significantly impact dividend payment (Nenova 2000; Dyck & Zingales 2004).

The control variables include the size of the supervisory board ($\mathrm{Supsize}_{it}$); the shareholding ratio of the supervisory board ($\mathrm{Supsharep}_{it}$); the size of the BoD (Bsize_{it}); the shareholding ratio of the BoD ($\mathrm{Bshareop}_{it}$); independent director percentage (Indep_{it}); firm size (InA_{it}); firm profitability (ROA_{it}); firm growth ($\Delta\mathrm{REV}_{it}$); leverage ($\mathrm{D/E}_{it}$); net cash flow (CF_{it}); R&D investment; and semi-mandatory dividend policy (SEO_{it}). These are as same as those controlled for in the estimations of chapter 4 and their summary statistics are presented in Table 4.2.

Figure 5.1 Investor sentiment, 2007-2016. Figure 5.1A shows the detrended log of the turnover ratio (Neal & Wheatley 1998). Turnover is the ratio of annual reported share volume to shares listed by CSMAR. Figure 5.1B shows the natural log of the annual number of initial public offerings, while Figure 5.1C shows the detrended log of average annual first-day returns on IPOs. The proxies of the IPO market were inspired by Baker and Wurgler (2006). Figure 5.1D shows the equity share ratio. This is the ratio of equity issuance to the total of equity and long-term debt issuances (Baker & Wurgler 2000). Figure 5.1E shows the dividend premium, which is the difference between the natural logs of the dividend payers' and nonpayer's average market-to-book ratio each year (Baker & Wurgler 2004). Panel 5.1F shows investor sentiment, a composite index that captures the common component in the five proxies (turnover, IPO number, first-day returns on IPOs, equity share ratio and dividend premium).

Figure 5.1 Investor Sentiment, 2007-2016

According to Figure 5.1, the range of share turnover is small, from 8.987 to 7.710; however, the ratio continues to fluctuate. The turnover ratio decreased from 8.6 to 7.1 between 2009 and 2012 and then rose again to 8.6 in 2015. The volatility of the number of IPOs is gradual. The first day returns on IPOs first dramatically decreased from 1.35

to 0.24 between 2007 and 2011 and then increased slightly to 0.44 in 2006. Similarly, the equity share ratio decreased considerably in the first two years of the statistical period and then increased slightly between 2013 to 2016. The dividend premium remained negative and decreased significantly, which indicates that investors imposed a negative stock price premium and preferred nonpayer firms (Baker & Wurgler 2004). Although the premium grew slightly in 2013, it then fell again in the next year. Finally, the volatility of investor sentiment is gentle and its value changes only slightly during the statistical period.

5.3.2 Univariate Analysis

Table 5.2 presents the univariate analysis of variables classified according to firms with dividend payers and nonpayers, including tests of the mean differences. The results show that the observation of cash dividend payers (12,267) is around twice the size of that of nonpayers (6,147). Nearly half of both payers and nonpayers are state-controlled and have highly concentrated ownership. The mean difference between investment sentiment for nonpayers and payers ($\mathrm{Sentiment}_{it}$) is 0.146, which is statistically significant at the 1% level and indicates that investors expect more on firms that are nonpayers to pay cash dividends. This result may hint that there may be a negative correlation between investor sentiment and dividend policy. Companies will tend to pay a cash dividend to deliver good signalling and attract investors according to signalling theory (Bhattacharya 1979; Miller & Rock 1985; Frankfurter & Wood 2002). The mean

differences between the sentiment proxies, share turnover ($STurn_{it-1}$), IPO number ($IPON_{it}$), first-day returns on IPOs ($IPOR_{it-1}$), the equity share ratio (ES_{it}) and dividend premium (P_{it-1}^{D-ND}), are quite small or even zero, but statistically positively significant at the 1% level. Similar statistics for the control variables are presented in Table 4.3 and described in section 4.4.2.

Table 5.2 Univariate Analysis of Dividend Payers and Nonpayers for Chapter 5

	Payers			Nonpayers			Nonpayers - Payers		
VARIABLE	N	Mean	Median	N	Mean	Median	N	Mean Diff.	t-stat
$Sentiment_{it}$	12,267	10.514	10.671	6,145	10.659	10.801	18,412	0.146***	15.052
$TopSOE_{it}$	12,267	0.425	0.000	6,145	0.488	0.000	18,412	0.063***	8.146
$Top1op_{it}$	12,267	0.235	0.208	6,145	0.211	0.182	18,412	-0.024***	-8.437
$STurn_{it-1}$	12,267	8.214	8.169	6,145	8.290	8.285	18,412	0.076***	12.416
$IPON_{it}$	12,267	13.890	14.134	6,145	14.055	14.134	18,412	0.164***	11.745
$IPOR_{it-1}$	12,267	0.451	0.349	6,145	0.519	0.408	18,412	0.068***	15.526
ES_{it}	12,267	0.716	0.717	6,145	0.716	0.717	18,412	0.000**	-2.483
P_{it-1}^{D-ND}	12,267	-0.101	-0.104	6,145	-0.095	-0.102	18,412	0.006***	13.286

This table presents the univariate analysis of payers and nonpayers. Payers are defined as firms which paid cash dividends, while nonpayers are those which did not do so. The sample period is from 2008 to 2016. The sample comprises all listed firms that issued A-shares on the Shenzhen and Shanghai Exchanges. The definitions of the variables are given in Table A. In addition, all the variables apart from dummy data were winsorized at the 1st and 99th percentile values. ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The variables comprise investor sentiment ($Sentiment_{it}$); share turnover ($STurn_{it-1}$); IPO number ($IPON_{it}$); first-day returns on IPOs ($IPOR_{it-1}$); the equity share ratio (ES_{it}); dividend premium (P_{it-1}^{D-ND}); the largest state-owned shareholder ($TopSOE_{it}$); and the shareholding ratio of the largest shareholder ($Top1op_{it}$).

5.3.3 Correlation

Table 5.3 provides the Pearson's correlation matrix of the independent and control variables for the supervisory board sample and dividend policy. The correlations between investor sentiment ($\mathrm{Sentiment}_{it}$) and the proxies of investor sentiment (STurn_{it-1}, IPON_{it}, IPOR_{it-1}, ES_{it} and P_{it-1}^{D-ND}) are high, which can be explained by the fact that the investor sentiment variable is the index composed of these five proxies. At the same time, the index of investor sentiment and its proxies will not exist in the same regression, which means that high multicollinearity will not affect the accuracy of the regression results. The correlations for the other variables are statistically significant at the 1% level, with most of the correlations lying close to or below 0.35, which implies low multicollinearity and is thus tolerable for estimation.

Table 5.3 Correlation Matrix for Chapter 516

	$Sentiment_{it}$	$STurn_{it-1}$	$IPON_{it}$	$IPOR_{it-1}$	ES_{it}	P_{it-1}^{D-ND}	$TopSOE_{it}$	$Top1op_{it}$	$Supsize_{it}$	$Supsharep_{it}$	$Bsize_{it}$	$Bshareop_{it}$	$Exeshareop_{it}$	$Indep_{it}$	InA_{it}	ROA_{it}	ΔREV_{it}	D/E_{it}	CF_{it}	$R\&D_{it}$	SEO_{it}
$Sentiment_{it}$	1.000																				
$STurn_{it-1}$	0.922***	1.000																			
$IPON_{it}$	0.872***	0.655***	1.000																		
$IPOR_{it-1}$	0.698***	0.767***	0.294***	1.000																	
ES_{it}	0.421***	0.570***	0.224***	0.356***	1.000																
P_{it-1}^{D-ND}	0.485***	0.361***	0.343***	0.597***	-0.095***	1.000															
$TopSOE_{it}$	0.076***	0.064***	0.050***	0.101***	-0.044***	0.090***	1.000														
$Top1op_{it}$	-0.080***	-0.052***	-0.020***	-0.195***	0.032***	-0.144***	0.267***	1.000													
$Supsize_{it}$	0.047***	0.041***	0.028***	0.067***	-0.028***	0.058***	0.360***	0.112***	1.000												
$Supsharep_{it}$	-0.059***	-0.056***	-0.039***	-0.069***	0.006	-0.052***	-0.227***	-0.192***	-0.086***	1.000											
$Bsize_{it}$	0.037***	0.032***	0.020***	0.059***	-0.033***	0.054***	0.261***	0.061***	0.353***	-0.048***	1.000										
$Bshareop_{it}$	-0.115***	-0.105***	-0.078***	-0.137***	0.031***	-0.115***	-0.471***	-0.310***	-0.257***	0.400***	-0.194***	1.000									
$Exeshareop_{it}$	-0.092***	-0.085***	-0.061***	-0.113***	0.025***	-0.094***	-0.368***	-0.251***	-0.206***	0.322***	-0.157***	0.786***	1.000								
$Indep_{it}$	-0.032***	-0.031***	-0.017**	-0.047***	0.013*	-0.048***	-0.060***	0.017**	0.267***	-0.151***	-0.426***	0.088***	-0.217***	1.000							
InA_{it}	-0.031***	-0.022***	-0.005	-0.076***	0.051***	-0.072***	0.320***	0.329***	-0.052***	0.109***	0.281***	-0.256***	0.144***	0.013*	1.000						
ROA_{it}	-0.008	-0.005	0.012	-0.053***	-0.013*	-0.040***	-0.120***	-0.021***	-0.038***	0.006	0.002	0.165***	0.028***	-0.018**	0.024***	1.000					
ΔREV_{it}	0.045***	0.057***	0.046***	0.002	0.037***	-0.036***	-0.058***	-0.076***	0.196***	-0.205***	-0.026***	0.028***	-0.293***	0.009	0.044***	0.172***	1.000				
D/E_{it}	0.022***	0.061***	0.051***	0.094***	-0.039***	0.085***	0.288***	0.155***	0.047***	-0.001	0.156***	-0.350***	-0.027***	-0.024***	0.402***	-0.408***	0.043***	1.000			
CF_{it}	0.049***	0.036***	0.035***	0.062***	-0.023***	0.066***	0.038***	0.062***	-0.051***	0.055***	0.065***	-0.029***	0.132***	-0.031***	0.050***	0.351***	-0.001	-0.156***	1.000		
$R\&D_{it}$	-0.041***	-0.037***	-0.025***	-0.055***	0.018**	-0.045***	-0.090***	-0.065***	-0.040***	0.020***	-0.055***	0.121***	0.060***	0.052***	-0.059***	0.028***	-0.004	-0.145***	-0.030***	1.000	
SEO_{it}	-0.059***	-0.060***	-0.042***	-0.056***	0.004	-0.050***	-0.085***	-0.028***	0.267***	-0.151***	-0.019***	0.073***	-0.217***	0.021***	0.087***	0.031***	0.159***	0.055***	-0.030***	0.053***	1.000

This table presents the correlation between all the independent variables, apart from the interaction terms. ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively.

5.4 Empirical Analysis

To investigate the above hypotheses, we intend to verify how the companies with highly concentrated or state-controlled ownership influence dividend policy based on investor sentiment. The factors that are controlled for in regressions comprise measures of the board of director features, namely Bsize_{it}, $\mathrm{Bshareop}_{it}$ and Indep_{it}, and firm characteristics, as indicated by InA_{it}, ROA_{it}, $\Delta\mathrm{REV}_{it}$, $\mathrm{D/E}_{it}$, CF_{it} and $\mathrm{R\&D}_{it}$. InA_{it}, ROA_{it} and $\Delta\mathrm{REV}_{it}$ are also measures of the maturity of firms to certify the life-cycle theory (DeAngelo, DeAngelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007; Denis & Osobov 2008). Chinese semi-mandatory dividend policy is controlled and indicated by SEO_{it}.

5.4.1 Investor Sentiment, Ownership and Propensity for Dividend Payment

According to hypotheses H5.1a – H5.2a, we test the significance of the association between the interaction of investor sentiment and ownership structure (represented by interaction terms $\mathrm{SE\_TopSOE}_{it}$ and $\mathrm{SE\_Top1op}_{it}$) and the propensity for cash dividend payments in Chinese listed firms. From previous research, we infer that investor sentiment could enhance or weaken the influence of state ownership or majority shareholders on dividend policy because of the catering incentives or information delivery (Baker & Wurgler 2004; Li & Lie 2006; Ferris, Sen, & Yui 2006; Truong & Heaney 2007).

Table 5.4 Logit Model: Investor Sentiment and Cash Dividend Payment

Logit Regression Model of Sentiment					
VARIABLE	(1)	(2)	(3)	(4)	(5)
$Sentiment_{it}$	-0.332***			-0.313***	-0.313***
	(-10.614)			(-5.783)	(-5.783)
$TopSOE_{it}$		0.111**		-2.191***	
		(2.415)		(-3.197)	
$Top1op_{it}$			0.995***		5.882***
			(8.330)		(2.954)
SE_TopSOE_{it}				0.215***	
				(3.337)	
SE_Top1op_{it}					-0.473**
					(-2.526)
$Supsize_{it}$	-0.058***	-0.060***	-0.070***	-0.064***	-0.064***
	(-3.158)	(-3.349)	(-3.787)	(-3.449)	(-3.449)
$Supsharep_{it}$	22.148***	24.130***	22.892***	24.082***	24.082***
	(5.553)	(5.978)	(5.694)	(5.927)	(5.927)
$Bsize_{it}$	0.046***	0.050***	0.039***	0.048***	0.048***
	(3.360)	(3.669)	(2.902)	(3.482)	(3.482)
$Bshareop_{it}$	1.541***	1.878***	1.756***	1.859***	1.859***
	(7.476)	(8.928)	(8.277)	(8.613)	(8.613)
$Exeshareop_{it}$	0.903***	0.943***	0.915***	0.928***	0.928***
	(2.921)	(3.011)	(2.948)	(2.954)	(2.954)
$Indep_{it}$	-0.903**	-0.841*	-0.874*	-0.944**	-0.944**
	(-1.977)	(-1.842)	(-1.917)	(-2.060)	(-2.060)
InA_{it}	0.792***	0.768***	0.802***	0.762***	0.762***
	(36.166)	(34.510)	(36.550)	(34.109)	(34.109)
ROA_{it}	23.939***	23.708***	23.581***	24.181***	24.181***
	(33.469)	(33.575)	(33.582)	(33.565)	(33.565)
ΔREV_{it}	-0.392***	-0.386***	-0.406***	-0.372***	-0.372***
	(-11.080)	(-10.759)	(-11.436)	(-10.439)	(-10.439)
D/E_{it}	-2.885***	-2.942***	-2.976***	-2.915***	-2.915***
	(-23.894)	(-24.507)	(-24.561)	(-24.027)	(-24.027)
CF_{it}	1.396***	1.213***	1.276***	1.298***	1.298***
	(4.740)	(4.163)	(4.370)	(4.418)	(4.418)
$R\&D_{it}$	-0.570	0.141	-0.140	-0.218	-0.218
	(-0.350)	(0.086)	(-0.086)	(-0.134)	(-0.134)
SEO_{it}	-0.014	0.026	0.021	0.006	0.006
	(-0.335)	(0.637)	(0.518)	(0.137)	(0.137)
Constant	-12.888***	-16.185***	-16.550***	-12.709***	-12.709***
	(-21.452)	(-32.681)	(-33.490)	(-16.491)	(-16.491)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
Pseudo. R-squared	0.286	0.281	0.285	0.290	0.290

This table presents the results of the logit regression of the propensity to pay cash dividends. The dependent variable $Payer_{it}$ takes a value of 1 when firms pay cash dividends and 0 otherwise. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy ones are winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms (SE_TopSOE_{it}) and (SE_Top1op_{it}); investor sentiment ($Sentiment_{it}$); the largest state-owned shareholder ($TopSOE_{it}$); and the shareholding ratio of the largest shareholder ($Top1op_{it}$) and other control variables, which are the size of the supervisory board ($Supsize_{it}$); the shareholding ratio of supervisors ($Supsharep_{it}$); the size of the BoD ($Bsize_{it}$); the shareholding ratio of the board of directors ($Bshareop_{it}$); the shareholding ratio of executives ($Exeshareop_{it}$); independent director percentage ($Indep_{it}$); firm size (InA_{it}); firm profitability (ROA_{it}); firm growth (ΔREV_{it}); leverage (D/E_{it}); net cash flow (CF_{it}); share turnover ($STurn_{it-1}$); R&D investment ($R\&D_{it}$); and semi-mandatory dividend policy (SEO_{it}).

Table 5.4 presents the results of the logit model estimating the relationship between investor sentiment, the largest state-owned shareholder and the degree of shareholding concentration, and the propensity of firms to pay cash dividends using logit models. Columns (1)-(3) include individual terms without interaction effects while columns (4)-(5) include the relevant interaction and constitutive terms. The coefficient of $\text{Sentiment}_{\text{it}}$ is negative and significant at the 1% level. This indicates that there is a significant negative relationship between investor sentiment ($\text{Sentiment}_{\text{it}}$) and the decision to pay cash dividends. The negative relationship between sentiment and the propensity to pay cash dividends follows signalling theory, which proposes that dividend payments are used to convey good information (Bhattacharya 1979; Miller & Rock 1985; Frankfurter & Wood,2002). A low sentiment means that investors have no confidence or expectations of the stock market, and cash dividends become the main source of income. As a result, companies will tend to pay cash dividends to deliver positive signalling and to attract investors. Companies tend to pay cash dividends to deliver good signals and to attract investors. Moreover, investor sentiment can positively influence the propensity of the state-controlled shareholders to continue paying cash dividends.

The coefficient of the largest state-owned shareholder (TopSOE_{it}) is positive in column (2) (0.111) and that of the largest shareholding ratio ($\text{Top1op}_{\text{it}}$) is also positive in column (3) (0.995), both of which are significant at the 1% level, indicating that state ownership and the degree of shareholding concentration *per se* increase the propensity

to pay cash dividends. However, in column (4), when the interaction term $\mathrm{SE\_TopSOE}_{it}$ is included, the coefficient of TopSOE_{it} changes to negative (-2.191) and significant although this is offset by the coefficient of interaction term which is positive (0.215) and significant at 1% level. This means that investor sentiment can influence the propensity of state-controlled shareholders to pay cash dividend positively.

As mentioned in previous research, this result is reasonable and can be interpreted as follows. First, because of the corporate pyramid ownership in China, the state as the largest shareholder may be unwilling to pay cash dividends. The pyramid ownership structure is popular because of the private benefits of control rights and is more prevalent in countries with weaker laws and undeveloped economic environments (La Porta, Lopez-de-Silanes, & Shleifer 1999; Claessens, Djankov, & Lang 2000; Attig, Gadhoum, & Lang 2003). A pyramid structure can establish an efficient internal capital market that helps to reduce external financing constraints (Manos, Murinde, & Green, 2012). This results in higher utilisation of investable funds, but lower surplus funds and cash dividends within the corporate pyramid ownership structure (Stein 1997; Bradford, Chen, & Zhu 2013). Second, according to agency theory, the corporate governance of Chinese firms is fairly weak, and the controlling shareholders are more likely to expropriate wealth from minority shareholders and outside investors and siphon off firms' resources (Berkman, Cole, & Fu 2009; Jiang, Lee, & Yue 2010; Peng, Wei, & Yang 2011). At the same time, a controlling shareholder has a strong incentive to maximise private benefits rather than shareholder wealth by occupying firm resources,

which is referred to as tunnelling (La Porta, Lopez-de-Silanes, & Shleifer 1999; Johnson et al. 2000; Faccio, Lang, & Young 2001). Finally, as the capital constraint is already restricted to the NSOEs but loose to the SOEs, SOEs could pay less cash dividend than NSOEs because the latter has to attract more outside investors in order to raise fund resources. However, when investor sentiment rises, the largest state-owned shareholder cannot restrain cash dividend payments if they are reluctant to pay and to expropriate wealth from minority shareholders and outside investors, which is consistent with hypothesis H5.1a.

Unlike the results of column (4), the effect of the largest shareholding ratio ($\mathrm{Top1op}_{it}$) remains positive and is in fact enhanced (5.882) in column (5) when the interaction term $\mathrm{SE\_Top1op}_{it}$ is added. But this positive effect is offset by the negative coefficient of the interaction term (-0.473) which is significant at the 1% level, which means investor sentiment can negate the strong positive influence of highly concentrated ownership on the propensity to pay cash dividends. On one hand, majority control gives the larger shareholders considerable power and discretion over dividend decisions and payout ratios, leading to an agency problem, in that the controlling shareholders are more likely to expand their personal interests by manipulating cash dividend payment (Gugler 2003). However, on the other hand, the larger shareholders need to pay attention to investor sentiment in cases of firms being less valuable and lacking investments. Overall, consistent with hypothesis H5.2a, investor sentiment can

help to alleviate agency problems and protect smaller shareholders and outside investors.

Among the control variables, the coefficient of Supsize_{it} is negative and significant at the 1% level. This indicates that there is a significant negative relationship between the size of the supervisory board (Supsize_{it}) and decisions to pay cash dividends. This result supports the argument that a smaller supervisory board helps to reduce agency problems, monitors management better, and represents stakeholders' benefits (Lipton & Lorsch 1992; Yermack 1996; Eisenberg, Sundgren, & Well 1998; Guest 2009; Lublin 2014). As a result, a smaller supervisory board can increase the propensity to pay cash dividends. The coefficients of Supsharep_{it}, Bsharep_{it} and Exesharep_{it} are all positive and significant at the 1% level. These results indicate that the shareholdings of the supervisors (Supsharep_{it}), directors (Bsharep_{it}) and executives (Exesharep_{it}) have a significant positive impact on the propensity to pay cash dividends, which supports the notion that insider ownership supports payment because of consideration of their personal wealth (Shleifer & Vishny 1986; Allen, Bernardo, & Welch 2000; Short, Zhang, & Keasey 2002; Blouin, Ready, & Shackelford 2004) and is consistent with the agency, bird in the hand and clientele effect theories. The results of other control variables are similar as in Table 4.4 of chapter 4.

In summary, the estimation results of Table 5.4 confirm that, first, there is a significant positive association between the interaction term of investor sentiment and SOEs, and the propensity to pay cash dividends, while the association between both, investor

sentiment and SOEs and cash dividend payment, is negative and significant, which is consistent with hypothesis H5.1a, that SOEs are more likely to pay cash dividends when investor sentiment favours dividend-paying firms. Second, there is a significant negative correlation between the interaction term of investor sentiment and the majority shareholder, and the propensity to pay cash dividends, while the correlation between investor sentiment is significant and negative and that between the shareholding ratio of the largest shareholder and dividend payment is significant and positive, which is consistent with hypothesis H5.2a, that the largest shareholders are more likely to pay dividends when investor sentiment favours dividend-paying firms.

5.4.2 Investor Sentiment, Ownership and Changes to Dividend Payment

In accordance with hypotheses H5.1b – H5.2b, this section tests how changes in cash dividend payments are affected by the interactions of investor sentiment and ownership structure (SE_TopSOE_{it} and SE_Top1op_{it}). According to previous research, we believe that investor sentiment could also enhance or weaken the influence of state ownership or majority shareholders on changes to dividend payments because of catering incentives or information delivery (Baker & Wurgler 2004; Li & Lie 2006; Ferris, Sen, & Yui 2006; Truong & Heaney 2007).

Table 5.5 OLS Model: Investor Sentiment and Cash Dividend Changes

OLS Regression Model of Sentiment					
VARIABLE	(1)	(2)	(3)	(4)	(5)
Sentiment_{it}	0.009**			0.020***	0.020***
	(2.480)			(2.807)	(2.807)
TopSOE_{it}		-0.004		0.509***	
		(-0.752)		(4.264)	
Top1op_{it}			0.011		0.120
			(0.812)		(0.357)
SE_TopSOE_{it}				-0.047***	
				(-4.264)	
SE_Top1op_{it}					-0.009
					(-0.289)
Constant	-0.070	0.026	0.036	-0.191**	-0.191**
	(-1.138)	(0.556)	(0.769)	(-2.082)	(-2.082)
Variable Control	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
R-squared	0.017	0.016	0.016	0.018	0.018
Adjust. R-squared	0.015	0.015	0.015	0.016	0.016

This table presents the results of the OLS regression of cash dividend payment. The dependent variable ΔD_{it} represents changes to dividends, either upwards or downwards. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from the dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms (SE_TopSOE_{it}) and (SE_Top1op_{it}); investor sentiment (Sentiment_{it}); the largest state-owned shareholder (TopSOE_{it}); and the shareholding ratio of the largest shareholder (Top1op_{it}). Variable control contains the same control variables as in the regressions.

Table 5.5 shows the estimates of the relationship between investor sentiment, the largest state ownership and the degree of shareholding concentration, and the changes to cash dividend payment. The coefficient of Sentiment_{it} is positive and significant at the 5% level. This indicates that there is a significant positive correlation between investor sentiment (Sentiment_{it}) and changes to cash dividends. The coefficients of the largest state ownership (TopSOE_{it}) and of the largest shareholding ratio (Top1op_{it}) are both are insignificant in colums (2) and (3), respectively. However, in column (4), with the interaction effect SE_TopSOE_{it} included, the coefficient of TopSOE_{it} is positive (0.509) and significant but this positive effect is offset by effect of SE_TopSOE_{it} which

is negative (-0.047) and significant at the 1% level. When there is higher sentiment, payers would like to adjust their approach and pay more dividends to cater to investors (Baker & Wurgler 2004; Li & Lie 2006; Ferris, Sen, & Yui 2006). At the same time, higher investor sentiment leads to state-controlled shareholders paying less cash dividends, which means that these shareholders are more likely to expropriate wealth from minority shareholders and outside investors. The coefficient of $\mathrm{Top1op}_{it}$ in column (5) is positive (0.120) but is not significant. This indicates that the degree of ownership concentration does not significantly impact on changes to paying cash dividends. In addition, the coefficient of the interaction term ($\mathrm{SE\_Top1op}_{it}$) shows an insignificant correlation with the initiation of cash dividends. This suggests that investor sentiment has no influence on the effect of majority shareholders on listed firms' cash dividend continuity. The results are similar to the those in Table 5.5, which proves that investor sentiment can positively influence firms with state-controlled shareholders to change their dividend payments.

5.4.3 Alterative Representation of Investor Sentiment

As the index of investor sentiment is composed of five proxies, share turnover (STurn_{it-1}), IPO number (IPON_{it}), the first-day returns on IPOs (IPOR_{it-1}), the equity share ratio (ES_{it}), and dividend premium (P_{it-1}^{D-ND}), we decided to test which singular measure actually influenced the dividend policy of state-controlled companies or companies with highly concentrated ownership. We built interaction terms for each of the

five proxies with both the largest state-owned shareholder ($\mathrm{TopSOE_{it}}$) and the shareholding ratio of the largest shareholder ($\mathrm{Top1op_{it}}$), then ran both logit and OLS regressions, with the results shown in Tables 5.6 and 5.7, to be compared with the results of Tables 5.4 and 5.5 respectively. It emerges that the IPO market ($\mathrm{IPON_{it}}$ and $\mathrm{IPOR_{it-1}}$) mainly impacts on both the propensity for and the changes to dividend payment of state-controlled companies or companies with highly concentrated ownership. IPO volume and IPO first-day returns are both found to be extremely sensitive to investor sentiment (Ljungqvist, Nanda, & Singh 2006; Baker & Wurgler 2006). Previous research finds a positive market reaction to dividend payment when companies initiate IPOs because of the valuation effects, which means the initiation of IPOs suggests that companies obtain more financial gains (Lipson, Maquieira and Megginson 1998; McCaffrey and Hamill 2000; Kosedag and Michayluk 2000). Meanwhile, according to the signalling theory, the initiation of IPOs delivers positive information of future earnings, which bring outside investor confidence to firms' value and profitability (Lipson, Maquieira, & Megginson 1998; Kosedag and Michayluk 2000; McCaffrey and Hamill 2000). Similarly, a high first-day return on IPOs is cited as a measure of investor enthusiasm, while a low idiosyncratic return is interpreted as a symptom of market timing.

Table 5.6 Alterative Representation: Investor Sentiment and Cash Dividend Payment

Logit Regression Model of Sentiment Indexes					
VARIABLE	(1)	(2)	(3)	(4)	(5)
$STurn\_TopSOE_{it}$	-0.073				
	(-0.250)				
$STurn\_Top1_{it}$	0.978				
	(1.057)				
$IPON\_TopSOE_{it}$		0.096			
		(1.205)			
$IPON\_Top1_{it}$		-0.440*			
		(-1.843)			
$IPOR\_SOE_{it}$			0.559*		
			(1.667)		
$IPOR\_Top1_{it}$			-0.073		
			(-0.059)		
ES_SOE_{it}				-7.886	
				(-0.983)	
ES_Top1_{it}				1.610	
				(0.067)	
$P_{it-1}^{D-ND}\_SOE_{it}$					-1.203
					(-0.602)
$P_{it-1}^{D-ND}\_Top1_{it}$					-2.940
					(-0.503)
$STurn_{it-1}$	-0.748***				
	(-2.753)				
$IPON_{it}$		-0.077			
		(-1.089)			
$IPOR_{it-1}$			0.174		
			(0.559)		
ES_{it}				18.817***	
				(2.783)	
P_{it-1}^{D-ND}					0.467
					(0.278)
$TopSOE_{it}$	4.607	4.607	4.607	4.607	4.607
	(0.910)	(0.910)	(0.910)	(0.910)	(0.910)
$Top1op_{it}$	-2.322	-2.322	-2.322	-2.322	-2.322
	(-0.155)	(-0.155)	(-0.155)	(-0.155)	(-0.155)
Constant	-22.187***	-22.187***	-22.187***	-22.187***	-22.187***
	(-5.081)	(-5.081)	(-5.081)	(-5.081)	(-5.081)
Firm Control Variables	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.304	0.304	0.304	0.304	0.299

This table presents the results of the logit regression of the propensity to pay cash dividends. The dependent variable $Payer_{it}$ takes a value of 1 when firms pay cash dividends, and 0 otherwise. The sample period is from 2008 to 2016, consisting of all the listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from the dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms ($STurn\_TopSOE_{it}$, $STurn\_Top1_{it}$, $IPONT\_SOE_{it}$, $IPON\_Top1_{it}$, $IPOR\_SOE_{it}$, $IPOR\_Top1_{it}$, ES_SOE_{it} , EST_op1_{it} , $P_{it-1}^{D-ND}\_SOE_{it}$ and $P_{it-1}^{D-ND}\_Top1_{it}$); the investor sentiment indexes ($STurn_{it-1}$, $IPON_{it}$, $IPOR_{it-1}$, ES_{it} and P_{it-1}^{D-ND}); the largest state-owned shareholder ($TopSOE_{it}$); and the shareholding ratio of the largest shareholder ($Top1op_{it}$). Variable control contains the same control variables as in the regressions.

Table 5.7 Alterative Representation: Investor Sentiment and Cash Dividend Changes 20

OLS Regression Model of Sentiment Indexes					
VARIABLE	(1)	(2)	(3)	(4)	(5)
$STurn\_TopSOE_{it}$	-0.055*				
	(-1.769)				
$STurn\_Top1_{it}$	0.119				
	(1.201)				
$IPON\_TopSOE_{it}$		0.012			
		(1.385)			
$IPON\_Top1_{it}$		-0.043*			
		(-1.719)			
$IPOR\_SOE_{it}$			-0.018		
			(-0.492)		
$IPOR\_Top1_{it}$			0.039		
			(0.269)		
ES_SOE_{it}				0.930	
				(1.083)	
ES_Top1_{it}				0.330	
				(0.127)	
$P_{it-1}^{D-ND}\_SOE_{it}$					0.085
					(0.404)
$P_{it-1}^{D-ND}\_Top1_{it}$					-0.488
					(-0.799)
$STurn_{it-1}$	0.049*				
	(1.740)				
$IPON_{it}$		0.000			
		(0.011)			
$IPOR_{it-1}$			-0.065**		
			(-1.995)		
ES_{it}				-0.109	
				(-0.149)	
P_{it-1}^{D-ND}					0.288
					(1.623)
$TopSOE_{it}$	-0.358	-0.358	-0.358	-0.358	-0.358
	(-0.665)	(-0.665)	(-0.665)	(-0.665)	(-0.665)
$Top1op_{it}$	-0.696	-0.696	-0.696	-0.696	-0.696
	(-0.436)	(-0.436)	(-0.436)	(-0.436)	(-0.436)
Constant					-0.218
					(-0.469)
Firm Variable Control	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
R-squared	0.020	0.020	0.020	0.020	0.020
Adjust. R-squared	0.017	0.017	0.017	0.017	0.017

This table presents the results of the OLS regression of cash dividend payment. The dependent variable ΔD_{it} represents changes to dividends, either upwards or downwards. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms ($STurn\_TopSOE_{it}$, $STurn\_Top1_{it}$, $IPONT\_SOE_{it}$, $IPON\_Top1_{it}$, $IPOR\_SOE_{it}$, $IPOR\_Top1_{it}$, ES_SOE_{it} , EST_op1_{it}, $P_{it-1}^{D-ND}\_SOE_{it}$ and $P_{it-1}^{D-ND}\_Top1_{it}$), the investor sentiment indexes ($STurn_{it-1}$, $IPON_{it}$, $IPOR_{it-1}$, ES_{it} and P_{it-1}^{D-ND}); the largest state-owned shareholder ($TopSOE_{it}$); and the shareholding ratio of the largest shareholder ($Top1op_{it}$). Variable control contains the same control variables as in the regressions.

5.4.4 Robustness Checks

This section presents alternative estimation methods to examine the association between cash dividend payment, investor sentiment and ownership structure. We first replaced the logit and OLS models with probit and tobit ones, respectively. Both logit and probit models are appropriate for a dichotomous dependent variable, while OLS and tobit models are both used for time-use data. Second, we used two-stage least squares (2SLS) regression to address the potential endogeneity concerns, which could be associated with omitted variables, simultaneity or equilibrium conditions.

Table 5.8 Robustness: Investor Sentiment and Cash Dividend Payment

Probit Regression Model of Sentiment					
VARIABLE	(1)	(2)	(3)	(4)	(5)
Sentiment_{it}	-0.191***			-0.179***	-0.179***
	(-10.452)			(-5.686)	(-5.686)
TopSOE_{it}		0.055**		-1.184***	
		(2.030)		(-2.950)	
Top1op_{it}			0.561***		3.270***
			(8.087)		(2.826)
SE_TopSOE_{it}				0.116***	
				(3.069)	
SE_Top1op_{it}					-0.262**
					(-2.407)
Constant	-7.478***	-9.370***	-9.586***	-7.384***	-7.384***
	(-21.852)	(-33.792)	(-34.717)	(-16.779)	(-16.779)
Firm Control Variables	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.295	0.293	0.290	0.290	0.290

This table presents the results of the probit regression of the propensity to pay cash dividends. The dependent variable Payer_{it} takes a value of 1 when firms pay cash dividends, and 0 otherwise. The sample period is from 2008 to 2016, consisting of all listed companies that issued A share on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms (SE_TopSOE_{it}) and (SE_Top1op_{it}); investor sentiment (Sentiment_{it}); the largest state-owned shareholder (TopSOE_{it}); and the shareholding ratio of the largest shareholder (Top1op_{it}). Variable control contains the same control variables as in the regressions.

5.4.4.1 Probit and Tobit Estimations

We replaced the logit model in Tables 5.4 with probit estimates to test the correlation between the propensity to pay cash dividends, investor sentiment and the features of ownership. In addition, we also replaced the OLS estimation in Table 5.5 with Tobit estimates. The test results are shown in tables 5.8 and 5.9. All the results remain consistent with our previous analysis.

Table 5.9 Regressions of Cash Dividend Payment 22

Tobit Regression Model of Sentiment					
VARIABLE	(1)	(2)	(3)	(4)	(5)
Sentiment_{it}	0.009**			0.020***	0.020***
	(2.526)			(2.967)	(2.807)
TopSOE_{it}		-0.004		0.509***	
		(-0.731)		(4.306)	
Top1op_{it}			0.011		0.120
			(0.819)		(0.378)
SE_TopSOE_{it}				-0.047***	
				(-4.317)	
SE_Top1op_{it}					-0.009
					(-0.304)
Constant	-0.070	0.026	0.036	-0.191**	-0.191**
	(-1.138)	(0.556)	(0.769)	(-2.082)	(-2.082)
Firm Control Variables	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.050	0.049	0.049	0.050	0.053

This table presents the results of the tobit regressions of cash dividend payment. The dependent variable ΔD_{it} represents changes to dividends, either upwards or downwards. The sample period is from 2008 to 2016, consisting of all the listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from the dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms (SE_TopSOE_{it}) and (SE_Top1op_{it}); investor sentiment (Sentiment_{it}); the largest state-owned shareholder (TopSOE_{it}); and the shareholding ratio of the largest shareholder (Top1op_{it}). Variable control contains the same control variables as in the regressions.

5.4.4.2 Two-Stage Least Squares (2SLS) Estimation

The problem of endogeneity exists in a statistical model when the explanatory variables are correlated with the error term (Wooldridge 2002; Chenhall and Moers, 2007). There are basically three major causes of endogeneity, namely omitted variables, measurement errors and simultaneity or reverse causation (Wooldridge, 2002; Chenhall and Moers, 2007; Larcker and Rusticus, 2007). First, omitted variable endogeneity occurs when a relevant control variable is omitted from the equation because the data is unavailable (Wooldridge, 2000). Second, measurement error endogeneity raises when the key independent variable is measured imperfectly (Larcker and Rusticus, 2007). Finally, simultaneity or reverse causation occurs when one or more than one of the independent variables is determined simultaneously by the dependent variable (Wooldridge 2002).

Simultaneity or reverse causation could arise in this study. The dependent variables of dividend policy are influenced by the independent variable, investor sentiment; simultaneously, dividend payment could be the determinant of the level of this sentiment. To mitigate potential endogeneity bias, we used two-stage least squares (2SLS) approaches to test the relationship between investor sentiment, ownership and dividend policy. We built the model as follows:

$$\Delta D_{it} = \alpha_0 + X_{it} + \sum_{k=2}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \qquad (5.3)$$

$$Y_{it} = \alpha'_0 + \Delta D_{it} + IV_{it} + \sum_{k=2}^{n} \alpha_k X'_{itk} \qquad (5.4)$$

Model (5.3) is the same model as model (5), used to test whether investor sentiment, SOE and the concentrated largest shareholders influence changes to dividend payments. Dependent variable ΔD_{it} is the change in cash dividend payment, which can be upwards, downwards or unchanged, calculated by the change in cash dividend payment from year *t-1* to year *t* divided by the net income of year *t*. X_{it} represents the interaction terms ($SETopSOE_{it}$, $SETop1op_{it}$) of investor sentiment ($Sentiment_{it}$), the largest state ownership ($TopSOE_{it}$) and the concentrated ownership ($Top1op_{it}$). $\sum_{k=2}^{n} \beta_k Controls_{itk}$ represents the same independent variables and control variables as the previous ones. ε_{it} is the error term and α_0 is the constant term.

In model (5.4), the dependent variable Y_{it} represents investor sentiment ($Sentiment_{it}$) and the degree of concentration of the largest shareholder ($Top1op_{it}$). The main independent variable ΔD_{it}, which could be endogenous, is the change to cash dividend payment, can be upwards, downwards or unchanged, calculated by the change in cash dividend payment from year *t-1* to year *t* divided by the net income of year *t*. To test the endogeneity of the changes to dividends to investor sentiment, IV_{it} contains the instrumental variables, namely share turnover ($STurn_{it-1}$); IPO number ($IPON_{it}$); the first-day returns on IPOs ($IPOR_{it-1}$); the equity share ratio (ES_{it}); dividend premium (P_{it-1}^{D-ND}). $\sum_{k=2}^{n} \alpha_k X'_{itk}$ represents the control variables, which are stock price (SP_{it}); stock return (SR_{it}); market-to-book ratio (M/B_{it}); firm size (InA_{it}); firm profitability (ROA_{it}); firm growth (ΔREV_{it}); leverage (D/E_{it}); and net cash flow (CF_{it}). To test the endogeneity of the changes in dividend to concentrated ownership, IV_{it} is the variable

of dummy SOE (TopSOE_{it}) and $\sum_{k=2}^{n} \alpha_k X'_{itk}$ presents the control variables of firm size ($\mathrm{InA_{it}}$); firm profitability ($\mathrm{ROA_{it}}$); firm growth ($\Delta\mathrm{REV_{it}}$); leverage ($\mathrm{D/E_{it}}$); net cash flow ($\mathrm{CF_{it}}$).

Table 5.10 presents the results of the endogeneity test by 2SLS. The results in column (1) first show a significantly positive association between investor sentiment and changes to dividend payments; and second, the degree of concentration of the largest shareholder is also correlated positively to changes in cash dividend, although are only shown in the 2SLS regression. The results in columns (2) and (3) provide no evidence that investor sentiment or the degree of concentration of the largest shareholder are determined by changes to dividend payments. In conclusion, our original results remain robust after considering the effect of endogeneity.

Table 5.10 OLS AND 2SLS Endogeneity Test

(1) Independent Variable ΔD_{it}				(2) Independent Variable $Sentiment_{it}$			(3) Independent Variable $Top1op_{it}$		
Variable	OLS	2SLS		Variable	OLS	2SLS	Variable	OLS	2SLS
$Sentiment_{it}$	0.009**	0.013***	0.009**	ΔD_{it}	0.000	0.000	ΔD_{it}	0.003	0.001
	(2.493)	(3.308)	(2.494)		(0.534)	(0.560)		(0.817)	-0.12
$Top1op_{it}$	0.015	0.144***	0.015	$STurn_{it-1}$	0.578***	0.578***	$TopSOE_{it}$	0.057***	0.057***
	(1.125)	-3.063	(1.126)		(67.155)	(67.086)		(21.247)	(21.251)
$TopSOE_{it}$	-0.007	-0.012**	-0.007	$IPON_{it}$	0.385***	0.385***	SP_{it}	0.049***	0.049***
	(-1.357)	(-2.234)	(-1.358)		(20.165)	(20.156)		(11.165)	(11.185)
$Supsize_{it}$	-0.001	-0.000	-0.001	$IPOR_{it-1}$	0.537***	0.537***	SR_{it}	-0.059***	-0.059***
	(-0.362)	(-0.078)	(-0.362)		(52.840)	(52.788)		(-13.938)	(-13.954)
$Supsharep_{it}$	-0.088	0.103	-0.088	ES_{it}	0.325***	0.325***	M/B_{it}	0.028***	0.028***
	(-0.249)	(0.287)	(-0.250)		(12.774)	(12.774)		(31.146)	(31.164)
$Bsize_{it}$	-0.002	-0.001	-0.002	P_{it-1}^{D-ND}	0.373***	0.373***	InA_{it}	0.055***	0.055***
	(-1.497)	(-0.834)	(-1.498)		(6.890)	(6.891)		(45.143)	(45.164)
$Bshareop_{it}$	-0.079***	-0.054**	-0.079***	SP_{it}	0.000***	0.000***	ROA_{it}	-0.018	-0.017
	(-3.230)	(-2.045)	(-3.232)		(10.158)	(10.126)		(-0.658)	(-0.627)
$Exeshareop_{it}$	0.044	0.045	0.044	SR_{it}	0.000***	0.000***	ΔREV_{it}	-0.022***	-0.021***
	(1.359)	(1.394)	(1.360)		(7.335)	(7.338)		(-11.064)	(-11.014)
$Indep_{it}$	-0.082	-0.085*	-0.082	M/B_{it}	-0.000	-0.000	D/E_{it}	-0.001	-0.001
	(-1.627)	(-1.669)	(-1.627)		(-1.335)	(-1.335)		(-0.732)	(-0.713)
InA_{it}	-0.000	-0.005**	-0.000	InA_{it}	0.000***	0.000***	CF_{it}	0.071***	0.071***
	(-0.059)	(-2.203)	(-0.060)		(3.201)	(3.202)		(4.022)	(4.046)
ROA_{it}	0.313***	0.303***	0.313***	ROA_{it}	-0.000***	-0.000***	Constant	-1.049***	-1.049***
	(9.071)	(8.717)	(9.075)		(-4.211)	(-4.222)		(-39.751)	(-39.770)
ΔREV_{it}	0.026***	0.028***	0.026***	ΔREV_{it}	-0.000*	-0.000*			
	(10.965)	(10.963)	(10.970)		(-1.814)	(-1.826)			
D/E_{it}	0.008***	0.008***	0.008***	D/E_{it}	-0.000**	-0.000**			
	(4.738)	(4.937)	(4.740)		(-2.168)	(-2.177)			
CF_{it}	0.179***	0.167***	0.179***	CF_{it}	0.000***	0.000***			
	(6.570)	(6.073)	(6.573)		(7.394)	(7.378)			
$R\&D_{it}$	-0.302	-0.260	-0.302	Constant	-0.013***	-0.013***			
	(-1.580)	(-1.357)	(-1.581)		(-8.886)	(-8.873)			
SEO_{it}	0.021***	0.022***	0.021***						
	(4.647)	(4.867)	(4.649)						
Constant	-0.078	-0.050	-0.078						
	(-1.309)	(-0.850)	(-1.310)						

This table presents the results of the endogeneity test. The sample period is from 2008 to 2016, consisting of all the listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise investor sentiment ($Sentiment_{it}$); the largest state-owned shareholder ($TopSOE_{it}$); and the shareholding ratio of the largest shareholder ($Top1op_{it}$) and other control variables are the size of supervisory board ($Supsize_{it}$); the shareholding ratio of supervisors ($Supsharep_{it}$); the size of the BoD ($Bsize_{it}$); the shareholding ratio of the board of directors ($Bshareop_{it}$); the shareholding ratio of executives ($Exeshareop_{it}$); independent director percentage ($Indep_{it}$); firm size (InA_{it}); firm profitability (ROA_{it}); firm growth (ΔREV_{it}); leverage (D/E_{it}); net cash flow (CF_{it}); share turnover ($STurn_{it-1}$); R&D investment ($R\&D_{it}$); and semi-mandatory dividend policy (SEO_{it}).

5.5 Conclusion

This chapter has studied the relationship between investor sentiment, ownership structure and dividend policy using a Chinese database and obtained several valuable results. First, different from the findings in previous research, there is a significant negative relationship between investor sentiment and cash dividend payment, which is not consistent with the catering theory but does fit signalling theory. Companies pay cash dividends in order to deliver positive signalling and to attract investors when there

is low investor sentiment, which means investors have no confidence in or expectations of the stock market (Bhattacharya 1979; Miller & Rock 1985; Frankfurter & Wood, 2002). Second, investor sentiment influences the propensity of controlling shareholders to pay cash dividends. Stronger investor sentiment urges state-controlled companies to pay cash dividends, while weaker sentiment restricts the willingness of the majority shareholders to pay dividends, which helps to protect the benefits of firms and their smaller and outside investors. The state-controlled shareholders are unwilling to pay dividend because the SOEs have more efficient internal capital market (Manos, Murinde, & Green, 2012) and personal interest conflicts (Berkman, Cole, & Fu 2009; Jiang, Lee, & Yue 2010; Peng, Wei, & Yang 2011). The controlling shareholders also expand their personal interests by manipulating dividends (Gugler 2003; Mardani & Indrawati 2018). However, they need to pay attention to investor sentiment, which can reflect investors' demands, in cases of firms being less valuable and lacking investments (Johnson et al. 2000; Faccio, Lang, & Young 2001).

A potential limitation of this study is that we did not consider the influence of risk and its effect on dividend policy. Some research proposes that when risk is controlled, there is little support for dividend catering theory (Hoberg & Prabhala 2009; Kuo, Philip & Zhang 2013). Although our results support signalling theory but not catering theory without controlling risk, it is still worth to develop a research to discuss the relationship between risk, investor sentiment and dividend policy in future study.

Chapter 6

STOCK LIQUIDITY, OWNERSHIP STRUCTURE AND DIVIDEND POLICY

6.1 Introduction

This chapter presents the empirical analysis of the relationship between stock liquidity, ownership structure and dividend policy, including the decisions on and changes to cash dividends based on a sample of Chinese-listed firms. Stock liquidity refers to the ability to trade stocks at a low cost without frequent changes in price (Griffin 2010). It is considered to influence dividend policy for several reasons, as explained by different theories. First, according to the clientele transaction cost view, there is a negative relationship between stock liquidity and dividend payment because investors can create homemade dividends without cost by selling their holdings in a financial market with trading friction. As a result, firms with less liquid stocks are more likely to pay cash dividends (Banerjee, Gatchev, & Spindt 2007). Second, the informational effect view argues that higher liquidity helps to reduce information asymmetry between outsiders and insiders and restrains the incentives of the former to expropriate from the latter for personal interests, which means stock liquidity influences dividend policy positively (Kyle 1985; Stiglitz 2000; Leuz, Nanda, & Wysocki 2003; Laporta et al. 2000). Third, stock liquidity is related to a firm's maturity, including size, profitability and growth opportunities, which demonstrate the ability of a firm to pay dividend (Banerjee, Gatchev, & Spindt 2005). The relationship between stock liquidity and dividend policy

has been extensively studied in the literature. Also studied is the relationship between corporate ownership and dividend policy, as noted in the previous chapter. For example, some research has focused on how different types of ownership, such as state, institution or managerial, affect dividend payment (e.g., Short, Zhang, & Keasey 2002; Farinha 2003; Lee & Xiao 2004; Amihud & Li 2006; Kumar 2006; Wang, Manry, & Wandler 2011; Lam, Sami, & Zhou 2012; Bradford, Chen, & Zhu 2013). Some studies have examined the relationship between the degree of ownership concentration and dividend payout policy. The distribution of stock among shareholders could cause agency problems between majority and minority shareholders, which significantly influences dividend payment (e.g., Johnson et al. 2000; Dyck & Zingales 2004; Truong & Heaney 2007; Lin, Chiou, & Chen 2010; Wellalage, Fauzi, & Wang 2014; Su et al. 2014).

While the relationships between stock liquidity and dividend policy, and between corporate ownership and dividend policy, have been established, the links between these three factors have not been thoroughly explored. According to agency theory, controlling inside shareholders could expropriate not only minority shareholders but also outside shareholders by manipulating dividend policy (Berkman, Cole, & Fu 2009; Jiang, Lee, & Yue 2010; Peng, Wei, & Yang 2011). However, they still need to show concern for investors' requirements and firms' value (Truong & Heaney 2007). Stock liquidity could influence both investors' demands and companies' decisions on dividend payment. Therefore, whether stock liquidity influences the largest

shareholders' decisions on cash dividend decisions or payments is an important question. Many Chinese listed firms' share distributions are not only highly concentrated, but the firms are also state-owned. A highly concentrated, state-controlled ownership as exists in Chinese listed firms provides an appropriate test base to assess whether stock liquidity influences SOEs' decisions on cash dividend payment.

This chapter thus aims to test the relationship between stock liquidity, ownership structure and the decisions on and level of dividend payments of listed Chinese firms. We estimate logit and OLS models to investigate how the largest and state shareholders will impact on these decisions and changes to cash dividend payments under the influence of stock liquidity.

The remainder of this chapter is organized as follows. Section 6.2 reviews the literature and develops the hypotheses. Section 6.3 briefly describes the models and variables for the regressions, while Section 6.4 introduces the sample selection and discusses the descriptive statistics. Section 6.5 discusses the empirical findings and robustness analyses and section 6.6 draws the conclusions.

6.2 Literature Review and Hypothesis Development

Previous research has investigated the correlation between stock liquidity and dividend policy. According to the view of the information effect, higher stock liquidity will affect dividend payment negatively because stock liquidity can transfer information to outside investors that is not reflected in the price and reduce information asymmetry (Kyle 1985;

Holmström & Tirole 1993; Banerjee, Gatchev, & Spindt 2007). According to agency theory, inside shareholders prefer to maintain more cash for private interests than to pay dividends and distribute inside funds (Stiglitz 2000; Laporta et al. 2000; Leuz, Nanda, & Wysocki 2003). As a result, high stock liquidity helps to reduce the opacity of the information environment and the expropriation of insiders and increase the incentives of insiders to pay cash dividend (La Porta et al. 2000; Li & Zhao 2008; Petrasek 2012; Jiang, Ma, & Shi 2017).

As described in chapter 5 (section 5.2), the features of Chinese ownership are state control and high concentration, which means the agency problem will be worse. Large insider shareholders of Chinese listed companies could be more reluctant to pay cash dividends. Moreover, large concentrated ownership increases the degree of information asymmetry (Agarwal 2007; Brockman & Yan 2009). When stock liquidity increases, more information is shared with outsiders, which could limit the expropriation from insiders and force shareholders to pay dividends. We, therefore, propose the hypotheses below:

H6.1a: The propensity of SOEs to pay cash dividends is affected by stock liquidity

H6.1b: Stock liquidity affects SOEs on changes of cash dividends

H6.2a: The propensity of firms with large shareholder concentration to pay cash dividend is affected by stock liquidity

H6.2b: Stock liquidity affects firms with large shareholder concentration on changes of

cash dividends.

6.3 Methodology

The data selection procedure is described in Section 3.2 and the models including variable definitions are given in Section 3.3 of Chapter 3. Here we briefly state the specifications for each set of hypotheses:

For testing hypotheses H6.1a – H6.2a:

$$Logit(Payer_{it} = 1) = \alpha_0 + X_{it} + X'_{it} + X\_X'_{it} + \sum_{k=4}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \quad (6.1)$$

For testing hypotheses H6.1b – H6.2b:

$$\Delta D_{it} = \alpha_0 + X_{it} + X'_{it} + X\_X'_{it} + \sum_{k=4}^{n} \beta_k Controls_{itk} + \varepsilon_{it} \quad (6.2)$$

where:

α_0 *is the constant term*

X_{it} *is the variable of market liquidity* (Liq_{it})

X'_{it} *is the variable of ownership: state ownership* ($TopSOE_{it}$) *or shareholding ratio of the largest shareholder* ($Top1op_{it}$)

$X'_{X_{it}}$ *is the interaction term between the variable of market liquidity* (Liq_{it}) *and the variable of ownership* ($TopSOE_{it}$) *or* ($Top1op_{it}$): $Liq_{TopSOE_{it}}$ *or* $Liq_{Top1op_{it}}$

$\sum_{k=4}^{n} \beta_k Controls_{itk}$ *is the set of control variables: the size of the BoD* ($Bsize_{it}$); *the shareholding ratio of the board of directors* ($Bshareop_{it}$); *independent director percentage* ($Indep_{it}$); *the size of the supervisory board* ($Supsize_{it}$); *the total shareholding ratio of supervisors* ($Supsharep_{it}$); *firm size* (InA_{it}); *firm profitability*

(ROA_{it}); firm growth (ΔREV_{it}); leverage (D/E_{it}); net cash flow (CF_{it}); R&D investment ($R\&D_{it}$); dividend premium (P_{it-1}^{D-ND}); and semi-mandatory dividend policy (SEO_{it}).

As with Chapter 5, the dependent variable in the specification (6.1) is a dummy variable representing the dividend decision (defined as $Payer_{it}$, *or, as alternatives,* $Initiation_{it}$ *or* $Continue_{it}$). The dependent variable in the specification (6.2) is the change in cash dividend payment (defined as ΔD_{it}). The precise definitions of the dependent, explanatory and control variables employed are detailed in section 3.4 of chapter 3.

6.4 Data Description

6.4.1 Summary Statistics

Table 6.1 shows the summary statistics of the mean independent variables in the regressions. The illiquidity ratio (Illiq_{it}), bid-ask-spread (BAS_{it}) and firms' turnover ratio ($\text{TurnOver}_{\text{it}}$) are three alternative variables used to measure stock liquidity. To calculate Iliq_{it}, the daily volume is measured in million yuan to adjust the value into a normal range. The difference between the mean (0.052) and median (0.229), as well as the min. (0.010) and max. (76.923), is quite large, which means that firms' liquidity ratios fluctuate and that there is a considerable difference between them. Similarly, the difference in $\text{TurnOver}_{\text{it}}$ between the min. (2.202) and max. (167.953) is large, which indicates that the yearly turnover ratio of each firm varies. The summary statistics for

the dependent variables are shown in Table 5.1 and described in section 5.4.1, while those for the control variables are shown in Table 4.2 and described in section 4.4.1.

Table 6.1 Summary Statistics for Chapter 6

VARIABLE	N	Mean	Median	Std. Dev.	Min	Max
Illiq_{it}	18,412	0.052	0.229	27.962	0.010	76.923
BAS_{it}	18,412	0.042	0.040	0.012	0.021	0.075
$\mathrm{TurnOver}_{it}$	18,412	26.117	20.962	5.274	2.202	167.953
TopSOE_{it}	18,412	0.446	0.000	0.497	0.000	1.000
$\mathrm{Top1op}_{it}$	18,412	0.227	0.200	0.180	0.003	0.632

This table presents the summary statistics of the mean variables used for the regressions. The sample period is from 2008 to 2016 and the sample comprises all listed firms that issued A-shares on the Shenzhen and Shanghai Exchanges. In addition, all the variables apart from the dummy ones were winsorized at the 1st and 99th percentile values. The variables comprise illiquidity (Iliq_{it}); bid-ask-spread (BAS_{it}); firm turnover ratio ($\mathrm{TurnOver}_{it}$); the largest state-owned shareholder (TopSOE_{it}); and the shareholding ratio of the largest shareholder ($\mathrm{Top1op}_{it}$).

6.4.2 Univariate Analysis

Table 6.2 shows the univariate analysis of the main independent variables, namely stock illiquidity (Iliq_{it}, ABS_{it} and $\mathrm{TurnOver}_{it}$), state-controlled shareholder (TopSOE_{it}) and the degree of concentration of the largest shareholder ($\mathrm{Top1op}_{it}$). The variables are divided into two groups, payers and nonpayers. The mean difference of Iliq_{it} between nonpayers and payers (0.020) is significantly positive, which indicates that the liquidity of the firms paying cash dividends is much higher than that of the companies which do not pay dividends. This result is consistent with the view of the relationship between stock liquidity and dividend payment in which high stock liquidity helps to reduce the opacity of the information environment and the expropriation of insiders and increases the incentives of insiders to pay cash dividends (La Porta et al. 2000; Li & Zhao 2008; Petrasek 2012). Similar statistics for dependent variables are presented in Table 5.2 and

described in section 5.4.2, while the control variables are shown in Table 4.3 and described in section 4.4.2.

Table 6.2 Univariate Analysis of Dividend Payers and Nonpayers for Chapter 6 25

	Payers			Nonpayers			Nonpayers - Payers		
VARIABLE	N	Mean	Median	N	Mean	Median	N	Mean Diff.	t-stat
$Illiq_{it}$	12,267	0.047	0.156	6,145	0.067	0.505	18,412	0.020***	7.319
BAS_{it}	12,267	0.415	0.039	6,145	0.044	0.042	18,412	0.003***	15.432
$TurnOver_{it}$	12,267	25.219	19.656	6,145	27.909	23.273	18,412	2.690***	8.827
$TopSOE_{it}$	12,267	0.425	0.000	6,145	0.488	0.000	18,412	0.063***	8.146
$Top1op_{it}$	12,267	0.235	0.208	6,145	0.211	0.182	18,412	-0.024***	-8.437

This table presents the univariate analysis of payers and nonpayers. Payers are defined as firms which paid cash dividends, while nonpayers are those which did not. The sample period is from 2008 to 2016 and the sample comprises all listed firms that issued A-shares on the Shenzhen and Shanghai Exchanges. In addition, all the variables apart from the dummy ones were winsorized at the 1st and 99th percentile values. ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The variables comprise illiquidity ($Illiq_{it}$); bid-ask-spread (BAS_{it}); firm turnover ratio ($TurnOver_{it}$); the largest state-owned shareholder ($TopSOE_{it}$); and the shareholding ratio of the largest shareholder ($Top1op_{it}$).

6.4.3 Correlation

Table 6.3 provides the Pearson correlation matrix of the independent and control variables for the supervisory board sample and dividend policy. A correlation coefficient close or equal to +1 or -1 suggests high or perfect multicollinearity among the variables. In this table, the correlations between most of the variables are correlated at the 1% level, with most lying close to or below 0.35, which implies low multicollinearity and is thus not a problem for estimation.

Table 6.3 Correlation Matrix for Chapter 6

	$Illiq_{it}$	BAS_{it}	$TurnOver_{it}$	$STurn_{it-1}$	P_{it-1}^{D-ND}	$TopSOE_{it}$	$Top1op_{it}$	$Supsize_{it}$	$Supsharep_{it}$	$Bsize_{it}$	$Bshareop_{it}$	$Exeshareop_{i}$	$Indep_{it}$	InA_{it}	ROA_{it}	ΔREV_{it}	D/E_{it}	CF_{it}	$R\&D_{it}$	SEO_{it}
$Illiq_{it}$	1.000																			
BAS_{it}	-0.038***	1.000																		
$TurnOver_{it}$	-0.039***	0.520***	1.000																	
$STurn_{it-1}$	0.044***	0.349***	0.072***	1.000																
P_{it-1}^{D-ND}	0.485***	0.211***	0.062***	0.361***	1.000															
$TopSOE_{it}$	0.076***	-0.075***	-0.195***	0.064***	0.090***	1.000														
$Top1op_{it}$	-0.080***	-0.210***	-0.366***	-0.052***	-0.144***	0.267***	1.000													
$Supsize_{it}$	0.047***	-0.061***	-0.128***	0.041***	0.058***	0.360***	0.112***	1.000												
$Supsharep_{it}$	-0.059***	0.014*	0.108***	-0.056***	-0.052***	-0.227***	-0.192***	-0.086***	1.000											
$Bsize_{it}$	0.037***	-0.086***	-0.155***	0.032***	0.054***	0.261***	0.061***	0.353***	-0.048***	1.000										
$Bshareop_{it}$	-0.115***	0.067***	0.238***	-0.105***	-0.115***	-0.471***	-0.310***	-0.257***	0.400***	-0.194***	1.000									
$Exeshareop_{i}$	-0.092***	0.058***	0.202***	-0.085***	-0.094***	-0.368***	-0.251***	-0.206***	0.322***	-0.157***	0.786***	1.000								
$Indep_{it}$	-0.032***	0.006	0.035***	-0.031***	-0.048***	-0.060***	0.017**	0.267***	-0.151***	-0.426***	0.088***	-0.217***	1.000							
InA_{it}	-0.031***	-0.218***	-0.323***	-0.022***	-0.072***	0.320***	0.329***	-0.052***	0.109***	0.281***	-0.256***	0.144***	0.013*	1.000						
ROA_{it}	-0.008	-0.080***	-0.072***	-0.005	-0.040***	-0.120***	-0.021***	-0.038***	0.006	0.002	0.165***	0.028***	-0.018**	0.024***	1.000					
ΔREV_{it}	0.045***	-0.093***	-0.139***	0.057***	-0.036***	-0.058***	-0.076***	0.196***	-0.205***	-0.026***	0.028***	-0.293***	0.009	0.044***	0.172***	1.000				
D/E_{it}	0.022***	-0.021***	-0.104***	0.061***	0.085***	0.288***	0.155***	0.047***	-0.001	0.156***	-0.350***	-0.027***	-0.024***	0.402***	-0.408***	0.043***	1.000			
CF_{it}	0.049***	0.020***	0.050***	0.036***	0.066***	0.038***	0.062***	-0.051***	0.055***	0.065***	-0.029***	0.132***	-0.031***	0.050***	0.351***	-0.001	-0.156***	1.000		
$R\&D_{it}$	-0.041***	0.034***	0.029***	-0.037***	-0.045***	-0.090***	-0.065***	-0.040***	0.020***	-0.055***	0.121***	0.060***	0.052***	-0.059***	0.028***	-0.004	-0.145***	-0.030***	1.000	
SEO_{it}	-0.059***	0.029***	0.053***	-0.060***	-0.050***	-0.085***	-0.028***	0.267***	-0.151***	-0.019***	0.073***	-0.217***	0.021***	0.087***	0.031***	0.159***	0.055***	-0.030***	0.053***	1.000

This table presents the correlation between all the independent variables apart from the interaction terms. The definitions of the variables are given in Table A. ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively.

6.5 Empirical Analysis

To investigate the above hypotheses, we aim to determine how companies with a highly concentrated or state-controlled ownership influence dividend policy, including the propensity for and changes to the payment of dividends, based on their level of stock liquidity. In this process, factors that are controlled for comprising measures of the features of the board of directors, namely $\mathrm{Bsize_{it}}$, $\mathrm{Bshareop_{it}}$ and $\mathrm{Indep_{it}}$, and firm characteristics as indicated by $\mathrm{InA_{it}}$, $\mathrm{ROA_{it}}$, $\mathrm{\Delta REV_{it}}$, $\mathrm{D/E_{it}}$, $\mathrm{CF_{it}}$ and $\mathrm{R\&D_{it}}$. $\mathrm{InA_{it}}$, $\mathrm{ROA_{it}}$ and $\mathrm{\Delta REV_{it}}$ are also measures of the maturity of firms in order to verify life-cycle theory (DeAngelo, DeAngelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007; Denis & Osobov 2008). Chinese semi-mandatory dividend policy is controlled and indicated by the dummy variable $\mathrm{SEO_{it}}$.

6.5.1 Stock Liquidity, Ownership and Propensity for Dividend Payments

According to hypotheses H6.1a – H6.2a, we test the significance of the association between the interaction of stock liquidity and ownership structure ($\mathrm{Illiq\_TopSOE}_{it}$ and $\mathrm{Illiq\_Top1op_{it}}$) and the propensity for cash dividend payment. With reference to previous research, we suspect that stock liquidity could enhance the impact of state ownership or majority shareholders on dividend policy as it helps to reduce the opacity of the information environment and the expropriation of insiders (La Porta et al. 2000; Li & Zhao 2008; Petrasek 2012).

Table 6.4 presents the relationship between stock liquidity, the largest state ownership and the degree of shareholding concentration, and the propensity of firms to pay cash dividends using logit models. Column (1) shows that the coefficient of $\mathrm{Illiq_{it}}$ is negative (-0.004) and significant at the 1% level. Although this indicates that stock liquidity influences the propensity to pay cash dividends positively, the value is too small to impact such payment in practice. In column (2), The coefficient of largest state ownership (TopSOE_{it}) is positive (0.117) and significant at the 5% level, while that of the largest shareholding ratio ($\mathrm{Top1op_{it}}$) in column (3) is also positive (0.944) and significant at the 1% level. The results indicate that state ownership and degree of shareholding concentration increase the propensity pay cash dividends. Columns (4) and (5) show that the coefficients of the added interaction terms $\mathrm{Illiq\_TopSOE}_{it}$ and $\mathrm{Illiq\_Top1op_{it}}$, respectively, are positive but not significant, which means that are no potentially mediating effects on dividend policy arising from the interaction effects. The results do not support hypotheses H6.1a – H6.2a, which may be for several reasons.

First, compared to developed countries such as the UK and the US, China, as a developing country, has a stock market with a more opaque information environment. Disclosure regulations and accounting standards in China are less developed (Allen, Qian, & Qian 2005; Jiang, Ma, & Shi 2017). In this relatively weak investor protection environment, Chinese concentrated ownership brings about more serious agency problems between controlling and minority investors. Controlling shareholders often use their discretion in the disclosure of the accounting information of firms as to whether

to withhold private information from outsiders or to disguise their opportunistic behaviour, which could exacerbate the information asymmetry (Firth et al. 2013; Gu, Li, & Yang 2013; Ke, Lennox, & Xin 2015). Second, compared to developed countries, dividend policy in China is less stable and the demands of outsiders usually change (Ke, Lennox, & Xin 2015; Jiang, Ma, & Shi 2017). At the same time, dividend policy depends largely on the will of insiders. Although stock liquidity can transfer information to outsiders and push insiders to make the right dividend decisions, it cannot eliminate the huge agency conflicts in practice. Third, majority shareholders are given great controlling power because of concentrated ownership. Therefore, large shareholders are not only engaged in controlling companies but also in managing them, including the dividend policy of the firms (Ibrahim 2006; Mirza & Azfa 2010).

Table 6.4 Stock Liquidity and Cash Dividend Payment

Logit Regression Model of Stock Liquidity					
VARIABLE	(1)	(2)	(3)	(4)	(5)
$Illiq_{it}$	-0.004***			-0.005***	-0.005***
	(-4.505)			(-3.809)	(-3.809)
$TopSOE_{it}$		0.117**		0.007	
		(2.534)		(0.108)	
$Top1op_{it}$			0.944***		0.942***
			(7.726)		(5.521)
$Illiq\_TopSOE_{it}$				0.002	
				(1.413)	
$Illiq\_Top1op_{it}$					0.001
					(0.133)
Constant	-18.501***	-17.234***	-16.873***	-18.070***	-17.978***
	(-32.116)	(-33.924)	(-33.112)	(-31.157)	(-30.914)
Firm Control Variables	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.295	0.295	0.297	0.298	0.299

This table presents the results of the logit regression of the propensity to pay cash dividends. The dependent variable $Payer_{it}$ takes a value of 1 when firms do pay cash dividends and 0 otherwise. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from the dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms ($Illiq\_TopSOE_{it}$) and ($Illiq\_Top1op_{it}$); illiquidity ($Illiq_{it}$); the largest state-owned shareholder ($TopSOE_{it}$); and the shareholding ratio of the largest shareholder ($Top1op_{it}$), with other control variables the same as in previous regressions.

In summary, there is no significant correlation between the interaction terms of market liquidity and ownership on the propensity for dividend payment. As a result, hypothesis H6.1a, that SOEs are more likely to pay dividends when stock liquidity is higher, and H6.2a, that the largest shareholders are more likely to pay dividends when stock liquidity is higher, are rejected.

6.5.2 Robustness Using Alternative Proxies for Dividend Payers

This section assesses the consistency of the above results testing the association between the interaction terms of market liquidity and ownership structure (Illiq_TopSOE_{it} and $\text{Illiq\_Top1op}_{\text{it}}$) and decisions on cash dividend payment. We divide the firms that pay cash dividends (payers) into two groups, initiation ($\text{Initiation}_{\text{it}}$) and continuing ($\text{Continue}_{\text{it}}$), which are the same as those defined in Chapter 5 (see section 5.3). According to previous research, we believe that market liquidity could enhance the impact of state ownership or majority shareholders on dividend decisions because it helps to reduce the opacity of the information environment and the expropriation of insiders (La Porta et al. 2000; Li & Zhao 2008; Petrasek 2012).

Table 6.5 presents the results showing the relationship between market liquidity, largest state ownership and the degree of shareholding concentration, and decisions on cash dividend payment. In the logit regression of cash dividend initiation (left panel), the coefficient of Illiq_{it} is negative (-0.005) and is statistically significant. However, with the interaction terms Illiq_TopSOE_{it} and $\text{Illiq\_Top1op}_{\text{it}}$ the effect becomes insignificant, which cannot support the notion that market liquidity will influence the

propensity of SOEs and firms with high concentrated ownership to pay dividends. Similarly, the results on dividend continuity (right panel) provide no evidence that market liquidity will influence the willingness of either SOEs or majority shareholders to continue paying dividends, which is not consistent with our hypotheses.

Table 6.5 Logit Model: Cash Dividend Initiation and Continuity

Logit Regression Model of Stock Liquidity

	$Initiation_{it}$					$Continue_{it}$				
VARIABLE	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Liq_{it}	-0.005***			0.003	0.003	-0.003***			-0.003**	-0.003**
	(-4.943)			(1.590)	(1.590)	(-4.263)			(-2.468)	(-2.468)
$TopSOE_{it}$		0.047		0.163*			0.122***		-0.002	
		(0.731)		(1.899)			(2.639)		(-0.037)	
$Top1op_{it}$			-0.072		0.714***			0.983***		1.104***
			(-0.453)		(3.304)			(7.982)		(6.705)
Liq_TopSOE_{it}				-0.004					0.003	
				(-1.950)					(1.922)	
Liq_Top1op_{it}					-0.023					-0.006
					(-1.898)					(-1.577)
Constant	-4.401***	-2.552***	-2.643***	-4.379***	-4.779***	-18.322***	-17.125***	-16.766***	-17.735***	-17.680***
	(-6.672)	(-4.585)	(-4.695)	(-6.510)	(-7.126)	(-31.760)	(-33.554)	(-32.739)	(-30.455)	(-30.334)
Variable Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.018	0.015	0.015	0.018	0.021	0.241	0.240	0.243	0.243	0.244

This table presents the results of the logit regressions of cash dividend payment. The dependent variable $Initiation_{it}$ takes a value of 1 when firms that did not pay a cash dividend in the previous year started to pay one the following year, and 0 otherwise. $Continue_{it}$ takes a value of 1 when firms that paid a cash dividend in the previous year continued to do so the following year, and 0 otherwise. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All variables apart from dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms $Illiq\_TopSOE_{it}$ and $Illiq\_Top1op_{it}$, illiquidity ($Illiq_{it}$), the largest state-owned shareholder ($TopSOE_{it}$) the shareholding ratio of the largest shareholder ($Top1op_{it}$) and other control variables which are the same as those previous regressions.

6.5.3 Stock Liquidity, Ownership and Changes to Dividend Payment

To test hypotheses H6.1b-H6.2b, this section examines the association between the interaction items of stock liquidity and ownership structure (Illiq_TopSOE_{it} and Illiq_Top1op_{it}) and changes to cash dividend payments. Following previous research, we believe that market liquidity could enhance the impact of state ownership or majority shareholders on dividend increases because it helps to reduce the opacity of the information environment and the expropriation of insiders (La Porta et al. 2000; Li & Zhao 2008; Petrasek 2012).

Table 6.6 presents the results showing the association between stock liquidity, the largest state ownership and the degree of shareholding concentration, and changes to the cash dividend payment. In the OLS regression of cash dividend changes, the coefficients of all the main variables are either 0.000 or insignificant, which first suggests that market liquidity has no significant impact on changes to dividend payment, and second that shareholders will not change dividends based on the level of liquidity. Hypothesis H1b, that SOEs are more likely to increase cash dividends when stock liquidity is higher, and H2b, that the largest shareholders are more likely to increase cash dividends when stock liquidity is higher, are therefore rejected. Besides the possible reasons of opaque information environment and serious agency problem mentioned above, another reasonable explaination could be that companies would like to maintain a stable dividend policy because they want to show their profitability and attract outside investors (Lintner 1962; Fama 1974; Baker & Powell 2000; Omet 2004).

Moreover, firms change their dividend payments as a result of other factors, such as firm characteristics and investor demands (DeAngelo, DeAngelo, & Stulz 2006; Bulan, Subramanian, & Tanlu 2007; Denis & Osobov 2008; Fajaria & Isnalita 2018; Romus, Anita & Balkish 2020).

Table 6.6 Stock Liquidity and Cash Dividend Payment Changes

OLS Regression Model of Stock Liquidity					
VARIABLE	(1)	(2)	(3)	(4)	(5)
$Illiq_{it}$	0.000***			0.000***	0.000***
	(3.286)			(3.599)	(3.599)
$TopSOE_{it}$		-0.004		0.001	
		(-0.801)		(0.134)	
$Top1op_{it}$			0.010		0.026
			(0.746)		(1.365)
$Illiq\_TopSOE_{it}$				0.000	
				(0.368)	
$Illiq\_Top1op_{it}$					0.000
					(0.002)
Constant	0.115**	0.021	0.031	0.115**	0.103*
	(2.092)	(0.455)	(0.660)	(2.046)	(1.812)
Firm Control Variables	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
Adjust. R-squared	0.017	0.016	0.016	0.017	0.017

This table presents the results of the OLS regression of cash dividend payment. The dependent variable ΔD_{it} represents the changes to dividends, either upwards or downwards. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All variables apart from dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms $Illiq\_TopSOE_{it}$ and $Illiq\_Top1op_{it}$, illiquidity ($Iliq_{it}$), the largest state-owned shareholder ($TopSOE_{it}$) the shareholding ratio of the largest shareholder ($Top1op_{it}$) and other control variables which are the same as in previous regressions.

6.5.4 Robustness Check

This section presents two robustness tests of the association between cash dividend payment, investor sentiment and ownership structure. First, we replace the main variables with different proxies to confirm that the results are consistent. Second, we re-

placed the logit and OLS models with probit and tobit ones. Both logit and probit models are appropriate for a dichotomous dependent variable, while OLS and tobit models are both used for time-use data. It is not necessary to check for endogeneity problems because the main variables are insignificantly correlated to the dependent ones.

6.5.4.1 Main Variable Replacement

We replaced the main variable of market liquidity (Illiq_{it}) which other variables also able to represent the level of market liquidity. Bid-Ask spread (BAS_{it}) and firm turnover ratio (Turnover_{it}) were used as the replacement variables. Tables 6.7, 6.8 and 6.9 show the results of the same logit and OLS models with the replacement variables. In table 6.7, the effect of Bid-Ask spread is negative and significant, but crucially the interaction effects remain insignificant, and the same applies to the results of Tables 6.8 and 6.9. Hence, we conclude that the results are consistent.

Table 6.7 Alternative Variable BAS: Stock Liquidity and Cash Dividend Payment

Logit Regression Model of Stock Liquidity					
VARIABLE	(1)	(2)	(3)	(4)	(5)
BAS_{it}	-5.324***			-5.045*	-5.045*
	(-3.052)			(-1.747)	(-1.747)
$TopSOE_{it}$		0.092**		-0.354**	
		(1.989)		(-2.313)	
$Top1op_{it}$			0.999***		2.085***
			(8.117)		(4.690)
BAS_TopSOE_{it}				10.277	
				(1.251)	
BAS_Top1op_{it}					-24.878
					(-1.485)
Constant	-16.202***	-16.202***	-16.202***	-16.279***	-16.279***
	(-29.892)	(-29.892)	(-29.892)	(-29.591)	(-29.591)
Variables Control	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.295	0.297	0.298	0.298	0.298

This table presents the results of the logit regression of the propensity to pay cash dividends. The dependent variable $Payer_{it}$ takes a value of 1 when firms pay cash dividends, and 0 otherwise. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy variables were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms BAS_TopSOE_{it} and BAS_Top1op_{it}, market liquidity (BAS_{it}), the largest state-owned shareholder ($TopSOE_{it}$) the shareholding ratio of the largest shareholder ($Top1op_{it}$) and other control variables which are the same as in previous regressions.

Table 6.8 Alternative Variable BAS: Cash Dividend Initiation and Continuity

Logit Regression Model of Stock Liquidity

	$Initiation_{it}$					$Continue_{it}$				
VARIABLE	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
BAS_{it}	0.765			4.060	4.060	-3.712**			-5.133*	-5.133*
	(0.333)			(1.081)	(1.081)	(-2.262)			(-1.920)	(-1.920)
$TopSOE_{it}$		0.041		0.168			0.084*		-0.294**	
		(0.633)		(0.824)			(1.934)		(-2.039)	
$Top1op_{it}$			-0.131		0.241			0.964***		1.509***
			(-0.819)		(0.475)			(8.566)		(3.758)
BAS_TopSOE_{it}				-3.014					8.865	
				(-0.669)					(1.213)	
BAS_Top1op_{it}					-9.119					-12.428
					(-0.784)					(-1.351)
Constant	-2.469***	-2.469***	-2.469***	-2.327***	-2.327***	-15.395***	-15.395***	-15.395***	-15.390***	-15.390***
	(-3.866)	(-3.866)	(-3.866)	(-3.704)	(-3.704)	(-30.905)	(-30.905)	(-30.905)	(-30.513)	(-30.513)
Variables Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412
Pseudo. R-squared	0.018	0.015	0.018	0.018	0.021	0.251	0.250	0.253	0.253	0.254

This table presents the results of the logit regressions of cash dividend payment. The dependent variable $Initiation_{it}$ takes a value of 1 when firm that did not pay cash a dividend in the previous year started to pay one in the following year, and 0 otherwise. $Continue_{it}$ takes a value of 1 when firms that paid a cash dividend in the previous year continued to do so in the following year, and 0 otherwise. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from dummy ones wre winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms BAS_TopSOE_{it} and BAS_Top1op_{it}, market liquidity (BAS_{it}), the largest state-owned shareholder ($TopSOE_{it}$) the shareholding ratio of the largest shareholder ($Top1op_{it}$) and other control variables which are the same as in previous regressions.

Table 6.9 Alternative Variable BAS: Stock liquidity and Cash Dividend Change

OLS Regression Model of Stock Liquidity					
VARIABLE	(1)	(2)	(3)	(4)	(5)
BAS_{it}	0.158			0.184	0.184
	(0.799)			(0.579)	(0.579)
$TopSOE_{it}$		-0.005		0.020	
		(-1.035)		(1.142)	
$Top1op_{it}$			0.010		-0.039
			(0.758)		(-0.818)
BAS_TopSOE_{it}				-0.586	
				(-1.496)	
BAS_Top1op_{it}					1.135
					(1.032)
Constant	0.126**	0.126**	0.126**	0.127**	0.127**
	(2.278)	(2.278)	(2.278)	(2.275)	(2.275)
Variables Control	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
R-squared	0.017	0.016	0.016	0.018	0.018
Adjust. R-squared	0.015	0.015	0.015	0.016	0.016

This table presents the results of the OLS regression of cash dividend payments. The dependent variable ΔD_{it} represents changes to dividends, either upwards or downwards. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All the variables apart from the dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms BAS_TopSOE_{it} and BAS_Top1op_{it}, market liquidity (BAS_{it}), the largest state-owned shareholder ($TopSOE_{it}$) the shareholding ratio of the largest shareholder ($Top1op_{it}$) and other control variables which are the same as in previous regressions.

Tables 6.10, 6.11 and 6.12 show the results of the same logit and OLS models with the replaced variable of market liquidity by $Turnover_{it}$, with the results remaining consistent with our previous analysis.

Table 6.10 Alternative Variable Turnover: Stock Liquidity and Cash Dividend Payment

Logit Regression Model of Stock Liquidity					
VARIABLE	(1)	(2)	(3)	(4)	(5)
$Turnover_{it}$	0.002**			0.004***	0.004***
	(2.308)			(2.847)	(2.847)
$TopSOE_{it}$		0.092**		0.126*	
		(1.995)		(1.759)	
$Top1op_{it}$			1.122***		1.310***
			(8.842)		(6.943)
$Turn\_TopSOE_{it}$				-0.001	
				(-0.623)	
$Turn\_Top1op_{it}$					-0.009
					(-1.458)
Constant	-16.942***	-16.942***	-16.942***	-16.924***	-16.924***
	(-31.644)	(-31.644)	(-31.644)	(-31.580)	(-31.580)
Firm Variable Control	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.294	0.293	0.296	0.297	0.297

This table presents the results of the logit regression of the propensity to pay cash dividends. The dependent variable $Payer_{it}$ takes a value of 1 when firms pay cash dividends, and 0 otherwise. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shared on the Shenzhen and Shanghai Exchanges, excluding financial firms. All variables apart from dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms $Turn\_TopSOE_{it}$ and $Turn\_Top1op_{it}$, investor sentiment ($Turnover_{it}$), the largest state-owned shareholder ($TopSOE_{it}$) the shareholding ratio of the largest shareholder ($Top1op_{it}$). Variable control contains the same control variables as in the regressions.

Table 6.11 Alternative Variable Turnover: Cash Dividend Initiation and Continuity34

Logit Regression Model of Stock Liquidity

	$Initiation_{it}$					$Continue_{it}$				
VARIABLE	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
$Turnover_{it}$	-0.001			-0.004*	-0.004*	0.003***			0.005***	0.005***
	(-0.699)			(-1.811)	(-1.811)	(2.992)			(3.681)	(3.681)
$TopSOE_{it}$		0.041		-0.041			0.085*		0.154**	
		(0.626)		(-0.430)			(1.949)		(2.296)	
$Top1op_{it}$			-0.168		-0.360			1.086***		1.239***
			(-1.024)		(-1.559)			(9.362)		(7.288)
$Turn\_TopSOE_{it}$				0.003					-0.003	
				(1.160)					(-1.357)	
$Turn\_Top1op_{it}$					0.010					-0.008
					(1.422)					(-1.402)
Constant	-2.296***	-2.296***	-2.296***	-2.327***	-2.327***	-16.080***	-16.080***	-16.080***	-16.050***	-16.050***
	(-3.659)	(-3.659)	(-3.659)	(-3.704)	(-3.704)	(-32.644)	(-32.644)	(-32.644)	(-32.536)	(-32.536)
Variables Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412
Pseudo. R-squared	0.018	0.015	0.015	0.018	0.019	0.250	0.250	0.253	0.253	0.253

This table presents the results of the logit regressions of cash dividend payment. The dependent variable $Initiation_{it}$ takes a value of 1 when firms that did not pay cash dividends in the previous year started to do so in the following year, and 0 otherwise. $Continue_{it}$ takes a value of 1 when firms that paid cash dividends in the previous year continue to do so in the following year, and 0 otherwise. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All variables apart from dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms $Turn\_TopSOE_{it}$ and $Turn\_Top1op_{it}$, investor sentiment ($Turnover_{it}$), the largest state-owned shareholder ($TopSOE_{it}$) the shareholding ratio of the largest shareholder ($Top1op_{it}$). Variable control contains the same control variables as in the regressions.

Table 6.12 Alternative Variable Turnover: Stock Liquidity and Cash Dividend Change

OLS Regression Model of Stock Liquidity					
VARIABLE	(1)	(2)	(3)	(4)	(5)
$Turnover_{it}$	0.000*			-0.000	-0.000
	(1.759)			(-0.028)	(-0.028)
$TopSOE_{it}$		-0.005		-0.009	
		(-1.013)		(-1.121)	
$Top1op_{it}$			0.015		-0.008
			(1.073)		(-0.432)
$Turn\_TopSOE_{it}$				0.000	
				(0.642)	
$Turn\_Top1op_{it}$					0.001*
					(1.788)
Constant	0.117**	0.117**	0.117**	0.113**	0.113**
	(2.174)	(2.174)	(2.174)	(2.102)	(2.102)
Variable Control	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
R-squared	0.017	0.016	0.016	0.018	0.018
Adjust. R-squared	0.015	0.015	0.015	0.016	0.016

This table presents the results of the OLS regression of cash dividend payment. The dependent variable ΔD_{it} represents changes to dividends, either upwards or downwards. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All variables apart from dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms $Turn\_TopSOE_{it}$ and $Turn\_Top1op_{it}$, investor sentiment ($Turnover_{it}$), the largest state-owned shareholder ($TopSOE_{it}$) the shareholding ratio of the largest shareholder ($Top1op_{it}$). Variable control contains the same control variables as in the regressions.

6.5.4.2 Alternative Estimation Methods

We replaced the logit model with the probit one to test the association between the propensity to pay cash dividends, stock liquidity and features of ownership. At the same time, the OLS models to test the correlation between the level of and change to cash dividend payment, stock liquidity and features of ownership were replaced by tobit models. The test results are shown in Tables 6.13, 6.14 and 6.15. The results are consistent with our previous analysis.

Table 6.13 Probit Model: Stock liquidity and Cash Dividend Payment

Probit Regression Model of Stock Liquidity					
VARIABLE	(1)	(2)	(3)	(4)	(5)
$Illiq_{it}$	-0.002***			-0.003***	-0.003***
	(-4.549)			(-3.956)	(-3.956)
$TopSOE_{it}$		0.063**		0.000	
		(2.316)		(0.003)	
$Top1op_{it}$			0.535***		0.523***
			(7.579)		(5.267)
$Illiq\_TopSOE_{it}$				0.001	
				(1.410)	
$Illiq\_Top1op_{it}$					0.001
					(0.312)
Constant	-10.758***	-10.007***	-9.796***	-10.504***	-10.443***
	(-33.174)	(-35.274)	(-34.349)	(-32.120)	(-31.822)
Variable Control	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.292	0.291	0.293	0.294	0.294

This table presents the results of the probit regression of the propensity to pay cash dividends. The dependent variable $Payer_{it}$ takes a value of 1 when firms pay cash dividends, and 0 otherwise. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shared on the Shenzhen and Shanghai Exchanges, excluding financial firms. All variables apart from dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms $Illiq\_TopSOE_{it}$ and $Illiq\_Top1op_{it}$, investor sentiment ($Illiq_{it}$), the largest state-owned shareholder ($TopSOE_{it}$) the shareholding ratio of the largest shareholder ($Top1op_{it}$). Variable control contains the same control variables as in the regressions.

Table 6.14 Probit Model: Cash Dividend Initiation and Continuity

Probit Regression of Stock Liquidity

	$Initiation_{it}$					$Continue_{it}$				
VARIABLE	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
$Illiq_{it}$	-0.003***			0.001	0.001	-0.001***			-0.004***	-0.004***
	(-4.945)			(1.572)	(1.572)	(-3.266)			(-5.314)	(-5.314)
$TopSOE_{it}$		0.024		0.081*			0.054**		-0.028	
		(0.737)		(1.850)			(2.071)		(-0.780)	
$Top1op_{it}$			-0.027		0.370***			0.527***		0.371***
			(-0.332)		(3.329)			(8.013)		(3.981)
$Illiq\_TopSOE_{it}$				-0.002					0.002	
				(-1.956)					(1.656)	
$Illiq\_Top1op_{it}$					-0.012					0.002**
					(-1.692)					(2.490)
Constant	-2.368***	-1.450***	-1.488***	-2.355***	-2.581***	-10.020***	-9.482***	-9.266***	-9.776***	-9.641***
	(-7.062)	(-5.092)	(-5.175)	(-6.895)	(-7.555)	(-33.151)	(-36.099)	(-35.018)	(-32.032)	(-31.456)
Variable Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.018	0.015	0.015	0.018	0.021	0.249	0.249	0.251	0.252	0.252

This table presents the results of the probit regressions of cash dividend payment. The dependent variable $Initiation_{it}$ takes a value of 1 when firms that did not pay cash dividends in the previous year started to do so in the following year, and 0 otherwise. $Continue_{it}$ takes a value of 1 when firms that paid cash dividends in the previous year continued to do so in the following year, and 0 otherwise. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All variables apart from dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms $Illiq\_TopSOE_{it}$ and $Illiq\_Top1op_{it}$, investor sentiment ($Illiq_{it}$), the largest state-owned shareholder ($TopSOE_{it}$) the shareholding ratio of the largest shareholder ($Top1op_{it}$). Variable control contains the same control variables as in the regressions.

Table 6.15 Tobit Model: Stock Liquidity and Cash Dividend Change

Tobit Regression Model of Stock Liquidity					
VARIABLE	(1)	(2)	(3)	(4)	(5)
$Illiq_{it}$	0.000***			0.000***	0.000***
	(3.217)			(3.430)	(3.430)
$TopSOE_{it}$		-0.004		0.001	
		(-0.777)		(0.131)	
$Top1op_{it}$			0.010		0.026
			(0.748)		(1.390)
$Illiq\_TopSOE_{it}$				-0.000	
				(-0.950)	
$Illiq\_Top1op_{it}$					-0.000
					(-1.302)
Constant	0.115**	0.021	0.031	0.115**	0.103*
	(2.094)	(0.444)	(0.650)	(2.065)	(1.833)
Variable Control	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	18,412	18,412	18,412	18,412	18,412
Pseudo R-squared	0.048	0.048	0.050	0.050	0.050

This table presents the results of the probit regression of cash dividend payment. The dependent variable ΔD_{it} represents changes to dividends, either upwards or downwards. The sample period is from 2008 to 2016, consisting of all listed companies that issued A shares on the Shenzhen and Shanghai Exchanges, excluding financial firms. All variables apart from dummy ones were winsorized at the 1st and 99th percentile values. t-statistics using standard errors that are robust to heteroskedasticity are provided in parentheses and ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively. The independent variables comprise the cross terms $Illiq\_TopSOE_{it}$ and $Illiq\_Top1op_{it}$, investor sentiment ($Illiq_{it}$), the largest state-owned shareholder ($TopSOE_{it}$) the shareholding ratio of the largest shareholder ($Top1op_{it}$). Variable control contains the same control variables as in the regressions.

6.6 Conclusion

This chapter has studied the relationship between market liquidity, ownership structure and dividend policy using data for Chinese listed firms. We find that market liquidity has no significant mediating impact on firms which are SOEs or controlled by majority shareholders in making decisions on cash dividend payment. At the same time, state-controlled or majority shareholders will not change their propensity to paying dividends or adjusting dividend payments because of market liquidity. In other words, Chinese

companies with concentrated state-controlled shareholders are not sensitive to stock market liquidity. This could be because of the less developed disclosure regulations and accounting standards (Allen, Qian, & Qian 2005; Jiang et al. 2017), the strong controlling power of the controlling shareholder (Ibrahim 2006; Mirza & Azfa 2010) and the serious agency conflict between different shareholders (Gu, Yang, & Yu 2013; Dong et al. 2014; Li et al. 2015).

Chapter 7

CONCLUSION

7.1 Introduction

This chapter provides the conclusions of the thesis. In evaluating the main findings of the empirical analyses covered in the previous three chapters, this concluding chapter offers the implications and provides suggestions for future research. Section 7.2 evaluates the main findings of the three empirical analyses conducted in this study, while Section 7.3 discusses the implications with suggestions for future research.

7.2 Main Findings and Evaluation

The thesis investigates the relationship between corporate governance and dividend policy, including how corporate structure, specifically the supervisory board and corporate ownership, with reference to concentrated and state-controlled shareholders, influence the dividend policy of firms listed on the Chinese stock market. Moreover, corporate governance is combined with stock market factors, namely investor sentiment and stock liquidity, to discover how the impacts of board structure and ownership are enhanced or weakened according to the reaction and variation in the stock market.

7.2.1 Supervisory Boards and Dividend Policy

We investigated the effects of the supervisory board on dividend policy decisions, including the propensity for, the level of and changes to cash dividends based on a sample of Chinese listed firms. The results of the empirical analysis, conducted in chapter 4, first show how the Chinese supervisory board impacts cash dividends decisions, and second, what board problems need to be improved and solved. First, the

Chinese supervisory board should maintain a small board size that helps to monitor management's behaviour effectively and to stand up for shareholders' benefits (Wu 2004; Guest 2009; Lublin 2014). Second, a higher emolument reception gives the members of the supervisory board incentives that motivate them to stand up for shareholders' benefits (Bertrand & Mullainathan 2001; Bebchuk & Fried 2003). Third, the significant positive relationship between the shareholding ratio of the supervisory board and cash dividend payment indicates that on one hand, supervisors who are also shareholders can inhibit management's jobbery by encouraging dividend payment; on the other hand, according to the agency theory, they are eager to gain cash dividends for personal advantages (Shleifer & Vishny 1986; Allen, Bernardo, & Welch, 2000).

The empirical analysis reveals that some other issues stand out from the research. First, employee representatives show no correlation with dividend policy and are unable to represent stakeholders' benefits nor work on monitoring management decisions. Second, members who are also shareholders may influence dividend policy based on their own benefits. Third, the Chinese supervisory board lacks independence. In fact, the "two-tier system" in China is in effect a one-tier system in nature. These issues need to be realised in an attempt to improve the function and effectiveness of the Chinese supervisory board. For example, the China Securities Regulatory Commission (CSRC), effectively the management department of the Chinese stock market, should learn from the German market about how to protect the employee representatives by formulating relevant regulations or laws and supporting them through professional organisations such as unions, so that the employee representatives can obtain considerable power and work more efficiently. Meanwhile, the codetermination should be introduced to help to

protect the interests of the firm and its employees and develop the monitoring function of the supervisory board (Wiedemann 1980; Gorton & Schmid 2000; Renaud 2007).

7.2.2 Investor Sentiment, Ownership Structure and Dividend Policy

The next empirical analysis investigated the relationship between investor sentiment, corporate ownership, with reference to concentrated and state-controlled shareholders, and dividend payout policy, including decisions on and changes to cash dividends, based on a sample of Chinese-listed firms. The issue of how specific ownership, concentrated or state, influences dividend policy based on investor sentiment has not been explored and this gap, facilitated by the unique setting of Chinese listed firms, is filled in this research. The results of this empirical analysis, conducted in chapter 5, first show that, contrary to findings in previous research, there is a significant negative relationship between investor sentiment and cash dividend decisions, which is not consistent with catering theory but does fit signalling theory (Bhattacharya 1979; Miller & Rock 1985). It indicates that companies decide to pay cash dividends in order to deliver positive signalling and to attract investors when investors have no confidence in or expectations of the Chinese stock market. Second, investor sentiment influences the propensity of companies with state-controlled and majority shareholders to pay cash dividends, that helps to protect the benefits of firms and outside investors and reduce the expropriation from majority shareholders to minority shareholders (Shleifer & Vishny 1997; Gugler 2003).

7.2.3 Stock Liquidity, Ownership Structure and Dividend Policy

Finally, the empirical analysis investigated the relationship between stock liquidity, corporate ownership (with reference to concentrated and state-controlled shareholders) and dividend policy, including the decisions on and changes to cash dividends, based on a sample of Chinese-listed firms. Following previous research, we estimate logit and OLS models to investigate how state ownership and concentrated shareholdings influence dividend policy in the presence of stock liquidity. Previous research explores the relationship between either stock liquidity and dividend policy (La Porta et al. 2002; Li & Zhao 2008; Petrasek 2012) or ownership and dividend policy (Berkman, Cole, & Fu 2009; Jiang, Lee, & Yue 2010; Peng, Wei, & Yang 2011). Consequently, the gap related to how specific ownership, concentrated or state, influences dividend policy based on stock liquidity is covered in this research. The results of this analysis, conducted in chapter 6, show that the magnitude of the effect of stock liquidity is minimal (as the estimated coefficient of this variable is close to 0) which means, in practice, stock liquidity has little influence on the dividend policy of the Chinese firms. Furthermore, stock liquidity has no significant mediating impact on firms which are SOEs or controlled by majority shareholders when they make decisions of cash dividend payments. At the same time, state-controlled or majority shareholders will not change their propensity for paying dividends or adjusting dividend payments because of stock liquidity. In other words, Chinese companies with concentrated or state-controlled shareholders are not sensitive to stock liquidity. This could be because of the less developed disclosure regulations and accounting standards and the strong controlling ability of the controlling shareholders (Allen, Qian, & Qian 2005; Firth et al. 2013; Gu, Li, & Yang 2013; Ke, Lennox, & Xin 2015; Jiang, Ma, & Shi 2017).

7.3 Implications and Further Research

The study extends and complements the current literature on dividend policy linking with the influences from supervisory board structures, ownership, investor sentiment and stock liquidity. The main contribution is to reveal how different characteristics of the "two-tier" Chinese supervisory board structure influences dividend policy and this process interacts with the environmental factors such as investor sentiment and stock liquidity. Based on the findings related to the supervisory board and dividend policy, the main implication emerging from the interpretation of the findings is to suggest improvements in the function and effectiveness of Chinese supervisory boards to ensure all shareholders benefit from dividend payments. In particular, the research provides some evidence of the effects of investor sentiment and stock liquidity interacting with the controlling and state-controlled shareholders to influence the propensity of Chinese listed firms to pay cash dividends, including the level and changes in such payments, an area which has not been explored in previous research.

There are some important extensions to this study which could provide guidance on the limitations of the current study and offer the potential for future research in the area. For example, some data cannot be collected because it is not reported in the databases. In the study of investor sentiment, ownership structure and dividend policy, we measured the index of investor sentiment with only five of the six sentiment proxies because data on closed-end fund discounts are unavailable. This could lead to potential omitted variable bias in the model. Also, we did not consider the influence of risk and its effect on dividend policy. Some research proposes that investor sentiment may be irrelevant when risk is controlled for (Hoberg & Prabhala 2009; Kuo, Philip & Zhang 2013). It will

be of interest to discuss the relationship between risk, investor sentiment and dividend policy in a future study.

On the other hand, this thesis focuses on China alone, largely because of the characteristics of highly concentrated and state-controlled ownership of Chinese firms. It would be interesting to extend the current research to different or similar research backgrounds, especially the dividend policy of firms with highly concentrated controlling shareholders, and investigate if the results would perhaps be similar in other countries. In addition, the database of this research contains all A-listed firms; however, it would be interesting to distinguish between the main boards, SME boards and GEM firms, or develop research in different stock exchanges, especially for B-listed companies owned by overseas investors. Moreover, this research only focuses on the dividend policy of companies with state-controlled ownership; however, there are firms with other types of ownership, such as institutional, family-controlled and personal, which could be investigated to establish how their dividend policy is influenced by investor sentiment or stock liquidity. The resulting research findings may uncover new information.

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