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Essays on corporate dividend policy: Chinese evidence — Source link

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THE UNIVERSITY OF QUEENSLAND

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Essays on Corporate Dividend Policy: Chinese Evidence

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Master of Finance (with merit)

Bachelor of Economics (with a major in International Finance)

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UQ Business School

Abstract

The thesis examines the dividend puzzle in the context of the Chinese capital market and further investigates the factors that significantly affect dividend policy in Chinese listed firms. In Chapter two, we examine the announcement effects of dividends in the Chinese capital market, with an emphasis on stock dividends. We begin by separately investigating the cumulative abnormal returns around the announcements of cash, stock and combined dividends. Because earnings are announced concurrently with dividend decisions in China, and therefore the estimated abnormal returns could be confounded by the earnings effect, we attempt to examine the dividend announcement effect under different earnings signals. We find a strong announcement effect of stock dividends even after controlling for concurrent earnings surprises. In contrast, pure cash dividend stocks experience no significant price run-up around the announcements. In addition, we examine the difference in market reactions to a positive or negative earnings announcement as firms initiate, maintain or switch to different forms of payouts. It appears that switching from other types of dividends to stock dividends reinforces the earnings signal.

Chapter three examines the effect of corporate governance and stock liquidity on corporate payout policy in the context of the split-share structure reform initiated in China in 2005. Under this reform, non-tradable shares were compulsorily converted into tradable shares. The reform removed a liquidity constraint; it also facilitated better alignment of the interests of controlling shareholders with those of outside investors. These changes led to significant improvements in firms' share liquidity and governance. We investigate the implications of share reform-induced governance and liquidity improvements for corporate dividend policy. First, we examine how listed firms' dividend policy responds to a governance and liquidity shock (i.e., the split-share structure reform) by comparing corporate dividend policy before and after the reform. Second, we explore the channels through which the reform affects corporate dividend policy by considering the effect of corporate governance and stock liquidity. We find that the average cash dividend payout decreases in the post-reform period and that the reduction in cash payouts is more pronounced among firms with higher growth rates and higher liquidity. Given the fundamental difference in controlling shareholders between state-controlled and privately controlled firms, the reduction in cash payouts appears to be more substantial in state-controlled firms. Our results are robust to different time horizons surrounding the reform. We also investigate whether the reform affects the decisions of firms to pay cash dividends. The results indicate that the propensity to pay cash dividends

significantly decreases after the reform. Furthermore, the post-reform period features a decrease in the probability of initiating a cash dividend and a greater likelihood of firms omitting cash dividends. In addition, firms tend to pay a lower level of dividends in the post-reform period when they maintain dividend payments.

In Chapter four, we investigate how a shock to financing capacity affects listed firms' dividend decisions in China, with a focus on financially constrained firms. In particular, we examine the change in firms' propensity to pay cash dividends and the change in the dividend payout ratio after a mandatory regulation on financing qualification was released in 2008. As the regulation mandatorily associates dividend payment with firms' external financing qualification, it can be regarded as a negative shock to firms' financing capacity. Measuring financial constraints using a synthetic Whited and Wu (2006) index, we observe that the regulation alters the relationship between financial constraints and dividend policy. Before the regulation, constrained firms are less likely to pay cash dividends than unconstrained firms; when these firms do pay dividends, they tend to pay lower dividends. However, this pattern reverses after the regulation comes into effect. Financially constrained firms become more willing to pay cash dividends than are unconstrained firms, and they also pay higher dividends in relative terms. Furthermore, we find that the behavior of financially constrained firms differs from that of unconstrained firms when affected by the shock to financing capacity. Constrained firms display a larger post-regulation increase in the propensity to pay cash dividends and a smaller post-regulation reduction in cash dividend payout ratios. We argue that the increased use of dividends among constrained firms is driven by the desire to enhance public financing capacity. Our results confirm this conjecture by demonstrating that financing activities in the post-regulation period are concentrated in constrained firms that qualify for public financing.

Declaration by author

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Publications during candidature

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Contributor	Statement of contribution
Rulu Pan (Candidate)	Research method development (90%) Empirical analyses (80%) Write the paper (70%) Edit and polish the paper (60%)
Xiangxi Tang	Empirical analyses (10%) Write the paper (5%) Edit and polish the paper (10%)
Yanyan Tan	Research method development (5%) Empirical analyses (10%) Write the paper (5%) Edit and polish the paper (10%)
Qiaoqiao Zhu	Research method development (5%) Write the paper (20%) Edit and polish the paper (20%)

Contributions by others to the thesis

The author is responsible for all sections of the manuscript under the guidance of the supervisory team. Professor Tom Smith oversaw the overall intellectual direction of the project and guided all modeling activities as well as the development of the conceptual framework. Professor Jing Shi brought expansive statistical and econometric techniques along with substantial economic and Chinese capital market knowledge. Dr Qiaoqiao Zhu assisted in the development of economic and financial aspects of the modeling.

Statement of parts of the thesis submitted to qualify for the award of another degree

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Keywords

dividend policy, corporate governance, stock liquidity, financial constraints, financing, chinese financial market

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FoR code: 1502, Banking, Finance and Investment, 80%
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List of Abbreviations

AR	Abnormal returns
CAR	Cumulative abnormal returns
CCER	China Centre of Economics Research
CSMAR	China Stock Market and Accounting Research
CSRC	China Securities Regulatory Commission
EPS	Earnings per share
EWBF	Employee Welfare and Bonus Fund
GMM	Generalized method of moments
KZ index	Kaplan and Zingales (1997) index
NPV	Net present value
NTS	Non-tradable shares
OSRF	Other Surplus Reserve Fund
PT	Particular transfer
SEO	Seasoned equity offering
SOE	State-owned enterprises
SRF	Surplus Reserve Fund
ST	Special treatment
TS	Tradable shares
WW index	Whited and Wu (2006) index

Chapter 1 Introduction

Why do firms pay dividends? The irrelevance proposition developed by Miller and Modigliani (1961) established the foundation for the contemporary study of dividend policy. Classical M&M theory states that what is truly important is a firm's investment policy and that the dividend is merely the residual between earnings and investments and is thus irrelevant to firm value. In particular, pure accounting changes, such as stock dividends, should have no significant effect on stock prices because shareholders do not actually receive any real cash returns. However, considerable empirical evidence shows that both managers and markets are concerned about dividends and that firm value changes in a manner consistent with dividend policy. This thesis examines this dividend puzzle in the context of the Chinese capital market and further investigates the factors that affect dividend policy in Chinese listed firms.

Prior studies observe a positive relationship between dividend announcements and common stock prices. For example, cash dividend initiations (Michaely, Thaler and Womack (1995)) or increases (Grullon, Michaely and Swaminathan (2002)) are found to have a positive return effect, but announcements of stock dividends also have significantly positive announcement effects (e.g., Grinblatt, Masulis and Titman (1984)). The majority of the research focuses on the U.S. market, while research conducted in less-developed markets is sparse. With its unique institutional setting, the Chinese stock market provides an interesting sample for examining this issue. Particularly, compared with the U.S., stock dividends are used more widely as a form of payouts in China.

In Chapter two, we examine the announcement effects of dividends in the Chinese capital market, with an emphasis on stock dividends. We begin by separately investigating the cumulative abnormal returns around the announcements of cash, stock and combined dividends. Because earnings are announced concurrently with dividend decisions in China, and therefore estimated abnormal returns could be confounded by the earnings effect, we then attempt to examine the dividend announcement effect under different earnings signals. We find a strong announcement effect of stock dividends even after controlling for concurrent earnings surprises. By contrast, pure cash dividend stocks experience no significant price run-up around the announcements. Our multivariate regressions further control for firm size, industry, along with earnings surprises. Our results are robust to these controls. Our findings remain unaffected when we define earnings surprises as current year profit or as the change in earnings per share from the previous year. Finally, we examine the difference in market reactions to a positive or negative earnings announcement as firms initiate, continue or switch to different forms of payouts. It appears that switching from other types of dividends to stock dividends reinforces the earnings signal.

These findings are puzzling in the context of contemporary dividend theories and our understanding of the Chinese capital market. One possible explanation for the puzzle is that stock dividend is a dual signal of good corporate governance and good future earnings prospect. In contrast, cash distributions may be interpreted as negative firm signals, for example, a signal of weak governance. This conjecture motivates us to further explore the factors that could affect the cash dividend policy of Chinese listed firms in the next two chapters.

Agency theory suggests that an increase in dividends mitigates agency problems and is favorably received by investors because managers will have less free cash flows to invest in negative net present value projects, leading to higher firm value (Easterbrook (1984); Jensen and Meckling (1976)). This implies a significant deviation from the M&M dividend irrelevance proposition. Another assumption embedded in the original M&M proposition is that investors are not liquidity constrained. When capital markets are perfect, investors with liquidity needs can create "homemade" dividends at no cost by selling an appropriate amount of their holdings in the firm. However, trading is not frictionless in real financial markets. Investors must either provide a price concession for an immediate execution or wait some time for an optimal execution. Therefore, stock liquidity can affect investors' demand for cash dividends. In an extreme form, the existence of trading constraints does not allow investors to freely sell their shares in the secondary market to satisfy their liquidity needs; thus, cash dividends represent the primary source of liquidity for investors.

Chapter three examines how corporate governance and stock liquidity affect corporate dividend policy in the context of an exogenous policy shock, the Chinese 2005 split-share structure reform. The split-share structure reform mandated the conversion of non-tradable shares into tradable shares, which constitutes firms' governance that facilitated better alignment of the interests of controlling shareholders with those of outside investors. This represents a potential improvement in firms' corporate governance. Moreover, the reform removed a substantial trading constraint. After the reform, stock liquidity is more closely related to the interests of controlling shareholders, who can sell some of their shares to meet their liquidity needs while benefitting from share price appreciation.

We investigate the implications of share reform-induced governance and liquidity improvements for corporate dividend policy in Chapter three. First, we examine how listed firms' dividend policy responds to a governance and liquidity shock (i.e., the split-share structure reform) by comparing corporate dividend policy before and after the reform. Second, we explore the channels through which the reform affects dividend policy by considering the effect of corporate

governance and stock liquidity. The consideration regarding the effect of liquidity on dividends is relatively new, partly because non-tradability is not a particular issue in more mature markets.

Using a panel of 1,275 listed non-financial firms in China over the period 2003-2011, we find that the average cash dividend payout decreases in the post-reform period and the reduction in cash payouts appears to be more notable for firms with higher growth rates and greater liquidity. Given the fundamental difference in controlling shareholders between state-controlled and privately controlled firms, the reduction in cash payouts appears to be substantial in state-controlled firms. The results are largely consistent with the view that the split-share structure reform is associated with improvements in corporate governance and stock liquidity.

We also investigate whether the reform affects firms' decision to pay cash dividends in Chapter three. The result indicates that the propensity to pay cash dividends significantly decreases after the reform. Furthermore, in the post-reform period, the post-reform period features a decrease in the probability of initiating a cash dividend and a greater likelihood of firms omitting cash dividends. In addition, when firms maintain dividend payments in the post-reform period, these payments tend to be lower relative to those in the pre-reform period.

Prior research suggests a value-enhancing effect of corporate dividend initiations and increases by reporting positive abnormal stock returns associated with dividend initiation and increase announcements (see, for example, Michaely*, et al.* (1995); Grullon*, et al.* (2002)). However, recent evidence (Chen and Wang (2012); Masters, Faff and Pathan (2013)) shows that dividend increases by financially constrained firms do not enhance firm value because a decline in corporate liquidity following dividend increases can be very harmful to constrained firms. For example, they are more exposed to financial distress risk due to diminished cash balances and could also experience underinvestment in the product market and become less competitive as financing future investment becomes more difficult.

Why would a constrained firm increase dividends if the increase does not improve firm value? In Chapter four, we propose that enhancing financing capacity could be a potential motivation for financially constrained firms to approach dividend-increasing decisions.[1] Previous studies show that issue costs are adversely associated with dividend yield (Deshmukh (2005)) and that the market reacts less negatively to dividend payers' SEO announcements than to nonpayers' announcements (Booth and Chang (2011)). The underlying argument is that dividend payment could reduce potential information asymmetry, thereby mitigating financing costs. La Porta, Lopez de Silanes,

[1] Hereinafter, by the term "financing capacity", we refer to the capacity to obtain public financing in the secondary market.

Vishny and Shleifer (2000) also note that in countries with weak legal protection of minority shareholders (for example, China), to be able to raise external funds on attractive terms, firms pay higher dividends to develop a reputation of treating shareholders well. Therefore, firms have incentives to utilize dividend payments to reduce information asymmetry and thus alleviate future financing costs. The incentive is even stronger for constrained firms, as they typically face a higher level of information asymmetry and thus higher costs of external funds.

Although the existing literature suggests a potential link between firms' dividend policy and financing capacity, most studies suffer from the problem of endogeneity arising from the interdependence of financing and dividend decisions (see, e.g., Li, Wang and Qi (2006); Masters, et al. (2013)). In Chapter four, we attempt to mitigate this potential endogeneity by examining a mandatory regulation on financing qualification that was enacted by the China Securities Regulatory Commission (CSRC, the equivalent of the Securities and Exchange Commission in the U.S.) in 2008.[2] In this regulation, the CSRC specified that, for listed firms intending to publicly issue new securities, the accumulated cash dividends distributed over the past three years must be no less than 30% of the average realized annual distributable profits. The regulation in essence dampens firms' financing capacity by associating dividend payment with financing eligibility, but it has no universal impact on dividend policy itself because it is applicable only if the firm is seeking public financing in the secondary market. This regulation can be regarded as an exogenous shock to firms' external financing capacity and thus provides us with an ideal quasi-natural experimental setting.

In Chapter four, we examine how the shock to financing capacity affects firms' dividend decisions and further investigate the cross-sectional difference between financially constrained and unconstrained firms by constructing a synthetic Whited-Wu financial constraints index (WW index, hereinafter), following Whited and Wu (2006). Using a sample of 8,758 firm-year observations from 941 non-financial firms listed on Shanghai and Shenzhen Stock Exchanges from 2003 through 2012, we find that, on average, firms are more likely to pay cash dividends after the regulation, but the amounts they pay are lower than before.

Applying the WW index to categorize our sample firms into constrained and unconstrained firms, we observe that the regulation alters the relationship between financial constraints and dividend policy. Before the regulation, constrained firms are less willing to pay cash dividends than unconstrained firms; when they do pay, they tend to pay lower dividends. This pattern, however, is reversed after the regulation comes into effect. Financially constrained firms now become more

[2] Hereinafter, by the term "financing qualification", we refer to the eligibility to publicly issue securities with respect to the dividend requirement.

willing to pay cash dividends than unconstrained firms and also pay higher dividends in relative terms.

Furthermore, we find that the behavior of financially constrained firms differs from that of unconstrained firms when affected by the shock to financing capacity. Constrained firms display a larger post-regulation increase in the propensity to pay cash dividends and a smaller post-regulation reduction in cash dividend payout ratios. As a robustness check, we use three alternative measures of financial constraints that are suggested by prior studies (i.e., firm size, state ownership and sales growth) and re-perform our tests. Our conclusions remain unchanged.

We also observe that, among all firms that qualify for financing (in terms of the dividend requirement), financially constrained firms in particular increase their propensity to finance in the post-regulation period. Combined with our previous findings that financially constrained firms increase both the propensity to pay dividends and the amount paid after the regulation (relative to their unconstrained counterparts), this additional finding provides a possible answer to the question of why financially constrained firms increase dividends. Our evidence suggests that constrained firms tend to increase cash dividend payments for the purpose of enhancing external financing capacity and facilitating future financing.

The thesis makes a number of contributions. First, we document Chinese investors' hierarchical preference for different types of dividends in Chapter two. It should be noted that before the completion of the split-share reform in September 2006, the state and legal person shares, which represent the majority ownership in most stocks in our sample, are prohibited from being traded. Therefore, the preference for stock dividends that we document in Chapter two is dominated by the preferences of small, minority investors. Understanding their preferred form of distribution would go a long way towards understanding governance and other issues in the Chinese market.

Second, our Chapter three complements prior work on dividend policy by providing insights into the effect of corporate governance and stock liquidity on dividend policy. Using the split-share structure reform as a quasi-natural experiment, our study contributes to the literature by identifying a setting that enables us to identify the causal effect of corporate governance and stock liquidity on dividend policy. Most previous empirical studies focus on the governance effect on dividend policy, but the effect of stock liquidity is rarely examined. Our study fills this gap. From a methodological perspective, our setting avoids the inference problems arising from the concern that both dividend policy and corporate governance arrangements can be endogenous responses to forces in firms' operating environments that are unobservable to researchers. Our findings in Chapter three also

advance the knowledge of corporate dividend policy in emerging economies by providing evidence from the Chinese capital market.

Third, our Chapter four advances the literature on the relationship between financial constraints and corporate dividend policy by empirically examining how financial constraints affect dividend policy in the presence of a financing shock. Such an examination greatly enriches the existing knowledge of the real effects of financial constraints. We gain a deeper insight into the relationship between financial constraints and corporate behaviors. Chapter four also contributes by highlighting the effect of external financing capacity on dividend policy. As Chinese listed firms, especially non-state-owned firms, rely heavily on external financing, identifying financing capacity as an influential factor enriches the understanding of the determinants of dividend policy in Chinese listed firms.

Finally, our Chapters three and four extend the research on the split-share reform and the dividend regulations in the Chinese capital market. Investigating the implications that the reform and the regulation have on firms' dividend policy is of particular importance, as it could provide real evidence on whether these policies achieve the goals of regulators.

The remainder of the thesis proceeds as follows. Chapter two examines the announcement effects of dividends in the Chinese capital market. Chapter three investigates how corporate governance and stock liquidity affect corporate dividend policy in the context of the 2005 Chinese split-share structure reform, and Chapter four explores how a shock to financing capacity affects listed firms' dividend decisions in China, with a focus on financially constrained firms. The final Chapter concludes the thesis.

Chapter 2 The Love for Stock Dividends: Chinese Evidence

2.1 Introduction

The effects of dividend policies are puzzling. The famous Modigliani-Miller theorem states that in an efficient market corporate policy (such as a dividend decision) has no effect on firm value unless it changes the firm's total cash flows or expected returns. Therefore, pure accounting changes, such as stock dividends, should have no significant effect on stock price since shareholders do not actually receive any real cash returns. However, empirical research shows that stock prices do react in a significant manner when firms make stock dividend announcements (Grinblatt, *et al.* (1984)).

In this chapter, we document an even stronger form of the puzzle in the Chinese capital market. Using a comprehensive sample of Chinese listed firms from 1993 to 2006, we confirm that Chinese listed firms experience significantly positive abnormal returns when they announce stock dividends. The average cumulative abnormal returns (CAR) in a 10-day window around the event date is 1.83%, twice of what has been reported in the U.S. market. Further, and more puzzlingly, we find that the announcement effect of pure cash dividend is negative for Chinese firms. These firms on average have a CAR of -0.56% in a 10-day window around announcements. The most preferred form of distribution however appear to be a combined cash and stock dividend distribution (combined dividend thereafter), which enjoys a CAR of 2.51% in the same window. Our finding of hierarchical preference for combined and stock dividends in China is robust to controlling for the effect of earnings announcement, an important factor previous studies neglect to account for. These additional findings are in stark contrast to what has been previously documented in the more mature markets. These studies generally find that cash dividend has positive announcement effects and is the more preferred form of payoff over stock dividend or repurchase (see for example, Michaely, *et al.* (1995)). By comparing investor reaction to different forms of dividend distribution, we unearth a deeper puzzle in the role of stock dividends in the Chinese market. Stock dividends not only act as a positive signal to the investors, they also validate cash distributions, which otherwise are seen as negative signals of the firms. We dub this phenomenon broadly as the Chinese dividend puzzle.

The majority of the research on stock dividends has been focused on the U.S. market (e.g. Grinblatt, *et al.* (1984); Conroy and Harris (1999)). Research conducted in less developed markets is sparse. With its unique institutional setting, the Chinese stock market provides an interesting sample for the issue. Comparing to the U.S., stock dividends are used more widely as a form of payouts in China. Chen and Yao (2000), Yu and Cheng (2001) and Wei (1998) are some of the few

published papers that provide limited evidence on the announcement effect of stock dividends. Our paper is partly motivated by the lack of previous empirical work in the area.

In order to provide more comprehensive and robust empirical evidence, we start, as mentioned, by investigating the market reactions to cash, stock and combined dividend announcements respectively. Since earnings are announced concurrently with dividend decisions in China, and therefore the abnormal returns could potentially be confounded with the earnings effect, we then set out to examine the dividend announcement effect under different earnings signals. We find a strong announcement effect of stock dividends even after controlling for the concurrent earnings surprises. Our multivariate regressions further control for firm size, industry, along with earnings surprises. And our results are robust to these controls. Our findings are also robust to whether we define earnings surprises as current year profit or as the change in earnings per share from the previous year. Finally, we examine the difference in market reactions to a positive or negative earnings announcement as firms initiate, continue or switch into different forms of payouts. It appears that switching from other types of dividends to stock dividends reinforces the earnings signal.

It should be noted that before the completion of the so called split shares reform in September 2006, the state and legal person shares which represent the majority ownership in most stocks in our sample are prohibited from trading. Therefore, the preference for stock dividends we document here is dominated by the preferences of small minority investors. Understanding their preferred form of distribution would go a long way towards understanding the governance and other issues in the Chinese market. Our study will also contribute to the literature of stock dividend and corporate payout policy in general.

The rest of the chapter is organized as follows. Section 2.2 discusses the related literature and introduces the institutional background of dividend payouts in China. Section 2.3 describes the data sources and summary statistics on financial characteristics of various groups are also provided. Section 2.4 presents the empirical evidence on the announcement effects of stock dividends and the robustness check is reported in Section 2.5. Section 2.6 concludes the chapter with a brief discussion of the implications of the results.

2.2 Related Literature and Institutional Background

Dividends are generally set by a firm's Board of Directors. The amount of earnings to be paid out as dividends is one of the major financial decisions for a company.

A great deal of research has been conducted on dividend effects over the last several decades. Miller and Modigliani (1961) show that in a perfect capital market, a company's dividend policy

will not affect its value since there is a trade-off between dividends and capital gains. However, a great number of researches observe a positive relationship between dividend announcements and common stock prices. Announcement of stock dividends is found to have a positive return effect (e.g. Grinblatt, *et al.* (1984)), but cash dividend initiations (Michaely, *et al.* (1995)) or increases (Grullon, *et al.* (2002)) also have significantly positive, if not bigger, announcement effects.

The traditional explanation of such announcement effect is that dividends, including stock dividends, are perceived by investors as a mechanism to reveal private information that was previously known only by company insiders such as managers (Bhattacharya (1979)). A stock dividend helps to reduce such information asymmetry by either directly signaling good information to investors (Miller and Rock (1985)) or by attracting media and analyst attention to make the stock price more desirable. In the Chinese context, Chen, Firth and Gao (2002) suggests that stock dividends are used to signal future earnings information to the market. A recent alternative theory is that firms pay cash dividends or stock dividends to cater to investor preferences (Baker and Wurgler (2004)).

The Chinese stock market is unique in terms of its legal systems, institutional features and state controlled economy. State Owned Enterprises play an important role in Chinese stock market. Most of the listed firms are controlled by the state governments via large proportion of direct shareholdings while individual shareholders have little influence over the firms. Minority shareholders have little influence in deciding Chinese listed firms' dividend policies.

Chinese companies are required to announce dividend decisions on the announcement day whether they decide to pay any dividend or not. According to the Chinese Company Law, companies can declare dividend distributions from the remaining distributable profits after reserved funds are satisfied. These reserved funds include the Surplus Reserve Fund (SRF), the Employee Welfare and Bonus Fund (EWBF), and the Other Surplus Reserve Fund (OSRF). A company can declare cash dividends which are taxable at the individual tax rate of 20 percent, or declare stock dividends which in accounting terms transfer retained earnings to equity capital. The capital gains on stocks are tax free. A company can also choose to pay a combination of cash and stock dividends. And in fact, many companies do.

While most US firms tend to adopt a stable dividend-paying policy, Chinese firms do not have a tradition to maintain a stable cash dividend. The extensive speculation in the Chinese stock market generates large volatility and turnover that make dividends less attractive than expected capital gains. As a result, most Chinese individual investors do not perceive cash dividends as the main source of stock returns. Anecdotal evidence suggests that stock dividend (rather than cash dividend)

announcements are regarded as favorable news by individual investors in China despite of the fact that the investors do not receive any real returns. The popularity of stock dividends as a form of corporate payout in China, in part, is also due to the strict approval requirement of stock splits. Companies find it easier to increase the number of shares outstanding and to reduce the share price through stock dividends.

Another characteristic of the Chinese stock market is that earnings are announced at the same time as cash dividends and stock dividends. As a result, the positive market reaction to stock dividend announcements may be attributed to the effect of the contemporaneous earnings surprise (e.g. Kane, Lee and Marcus (1984)).

A few papers study the announcement effect of stock dividends. However, their empirical evidence is limited. For example, Chen and Yao (2000) and Wei (1998) find positive abnormal stock returns around the announcement dates of stock dividends in Chinese stock market. However, only 403 announcements are examined in Chen and Yao (2000) and the sample in Wei (1998) only consists of the announcements in 1997. And they do not compare stock dividend announcement with the announcement of other forms of the distributions. Chen*, et al.* (2002) conduct a study on the announcements made by listed A-share companies in China and show that stock dividend announcements, which are released simultaneously with earnings in China, corroborate or attenuate the signal from earnings. However, they do not explain why stock dividends have greater signaling properties than cash dividends in Chinese stock market and do not take into account combined cash and stock dividends either.

2.3 Data and Descriptive Statistics

2.3.1 Data

Our sample includes all Chinese A-shares listed on the Shanghai and Shenzhen Stock Exchanges during the period from 1 January 1993 to 31 December 2006, obtained from China Centre of Economics Research (CCER). Since the split-share reform is not completed until end of 2006, restricting our sample to that period allows us to have a consistent regulatory environment for our study. For each firm in each year (thereafter, firm-year), we merge company financial information, dividend distribution details with the return data collected from Thomason Financial DataStream.[3] The original data consists of 12,538 firm-years which representing 1,475 listed A-shares on both Shanghai and Shenzhen Stock Exchanges. After removing delisted companies for which we cannot

[3] The returns are adjusted for capitalization changes. The results (unreported) are essentially the same when unadjusted prices are used.

obtain share price data, a total of 11,943 observations are included in our test sample. They represent 1,413 companies over the sample period.

2.3.2 Summary Statistics

Table 2.1 compares firm characteristics between non-dividend paying and dividend paying firms, and various subgroups. Unlike U.S. firms, Chinese firms need to make a dividend declaration on announcement date even when no dividend, cash, stock or combined, is to be paid. Therefore, we can classify a company as non-dividend paying or dividend paying depending on whether any type of dividend payments is declared.

[Insert Table 2.1 about here]

We observe a number of interesting differences in firm characteristics between the dividend paying and the non-dividend paying groups. Dividend paying firms are on average larger. The average total asset value for the dividend paying group is $3,254 million, much higher than the $1,804 million for the non-dividend paying group. Dividend paying firms also exhibit a higher average earnings per share (EPS=$0.32) than non-dividend paying firms, who on average have a negative EPS ($-0.01). Further, dividend paying firms have a much higher growth rate than non-dividend paying firms. The EPS growth rate is 41 percent for dividend paying group while non-dividend paying group shows negative growth. The t-test results indicate that the above differences between the two groups are highly statistically significant. The results therefore imply that companies that experience an operational loss and decreased earnings are less likely to make dividend payments. The difference in earnings also motivates the need of controlling for earnings announcement in our later analysis.

The dividend paying firms are further grouped into three sub-samples by dividend types. We then investigate the cross sectional differences in firm characteristics among those subsamples. Although our goal is not to explain the motivations for firms to choose different dividend payment mechanisms, this allows us to gain a basic understanding about whether the announcement effects are likely to be uniformly distributed across various firm characteristics. The results are also presented in Table 2.1. On average, pure cash dividend firms are larger in size than that of the stock dividend and combined dividend groups. The average total asset value for the pure cash dividend group is almost four times larger than its two counterparts. However, the two stock dividend groups exhibit much better earnings capacities. For instance, the average EPS for the combined dividend groups is $0.44, which is about 50 percent higher than that of the pure cash dividend group. More importantly, the pure stock dividend group and the combined dividend group exhibit an earnings

growth rate of over 70 percent per year on average. In contrast, it is only 24 percent for the pure cash dividend group. This indicates that companies that choose to pay any form of stock dividends are normally those small companies with higher growth opportunities.

In summary, the results reported in Table 2.1 outline that dividend paying groups are larger companies with better earnings capacities and higher growth opportunities. Within the two stock dividend paying groups, the pure cash dividend paying companies are relatively larger in size but with poorer operational earnings and growth options.

2.4 Empirical Results

We use an event study model to investigate the announcement effect in the event window. Event window is defined as five trading days before the announcement date (t=-5) to five trading day after the announcement date (t=5). The design of our event window is to capture any possible information leakage prior to the formal announcement, as well as the possible delayed reactions of investors. We also experimented with different definitions of event window, the results, which are not reported for brevity, are qualitatively similar and do not affect our conclusions. For each firm, abnormal returns are defined as the differences between firm returns and market return on a specified date within the event window. The abnormal returns are then summed up over periods in the window to calculate the cumulative abnormal returns. We then compute average cumulative abnormal returns (CARs). For a sample of N firms, t-test statistics is formed by calculating $\frac{CAR}{std(CAR_i)/\sqrt{N}}$, where $std(CAR_i)$ is the standard deviation of individual firm's cumulative abnormal return, CAR_i. Our approach has higher bench market than a market model approach; therefore, any abnormal return we find should be robust to alternative market model methodology.

2.4.1 Dividend Paying vs. Non-Dividend Paying Groups

Table 2.2 reports average abnormal returns (ARs) and average cumulative abnormal returns (CARs) for both dividend paying and no paying groups. Two clear patterns are observed. First, there are persistent ARs prior to the announcement date, suggesting information leakage prior to the actual announcement. For instance, dividend paying firms have significantly positive abnormal returns ranging from 0.09% to 1.17% per day before the event day (i.e., t=-5 to -1). On the event day (t=0), dividend paying firms actually exhibit a negative AR. And, the ARs after the announcement (t=1 to 5) are largely insignificant. These results suggest that the information about the dividend announcement has already been incorporated in the share price before the announcement. It is

consistent with the notion that the Chinese capital market is immature and subject to information leakages.

[Insert Table 2.2 about here]

Second, dividend paying firms have a significantly positive CAR in the event window while non-paying firms have a significantly negative CAR. Figure 2.1 plots these CARs for the two groups. The CAR in [-5, 5] is 0.43 percent for dividend paying group, compared with -1.47 percent for non-dividend paying group. The differences in CARs between the two groups are significantly different from zero. The evidence shows that investors react differently to dividend announcements. They react positively to any type of dividend payment and react negatively if a company chooses not to pay dividends.

[Insert Figure 2.1 about here]

2.4.2 Comparing Abnormal Returns among Dividend Paying Sub-groups

Announcement effects of dividends among dividend paying sub-groups are further explored in Table 2.3 and Figure 2.2. Three dividend paying sub-groups are considered. They are pure cash dividends, pure stock dividends and combined cash and stock dividends groups.

[Insert Table 2.3 and Figure 2.2 about here]

The result provides empirical support on the argument that Chinese investors prefer stock dividends rather than cash dividends. In Table 2.3 and Figure 2.2, it is obvious that investors react negatively to the pure cash dividend payment. For instance, for pure cash dividend group over the event window, there are only three (out of eleven) ARs that are significantly different from zero, occurring at t = -1 to 1 and surprisingly, they are all negative. The [-5, 5] CAR for the pure cash dividend group is -0.56 percent and highly significant. Examining the pure stock dividend and combined dividend groups reveals a different story. ARs for both groups are always significantly positive before and at the announcement date. The [-5, 5] window CAR is 1.83 percent for the pure stock dividend group and is 2.51 percent for the combined dividend group with respective t-statistics of 6.63 and 9.61. In panel B of Table 2.3, we test the differences in CARs between the pure cash dividend and the two stock dividend groups. These differences are highly significant. Investors seem to prefer the combined distribution, followed by pure stock dividend, to pure cash distributions. It is interesting to note that abnormal returns for the pure stock dividend and the combined dividend groups have similar patterns over the event window. The significantly positive abnormal returns are mainly in the pre-announcement period, while they are generally insignificant in the post-announcement period. It suggests that the pattern of CARs we observe in Table 2.2 is

mainly driven by those of stock dividend firms and combined dividend firms. Cash dividend does not appear to be preferred by investors. Compared to cash dividends, stock dividends not only can help investors to avoid tax, but also can increase the number of shares held by investors. Given that the extensive speculation in the Chinese stock market generates large volatility and turnover (Xiong and Yu (2011)), the incremental share holdings obtained from stock dividends can bring additional capital gains to those investors when the stock price increases, which are generally higher than the amount of cash dividends. Therefore, most investors prefer stock dividends to cash dividends in general. However, the realization of capital gains relies on the increase of stock prices and thus is uncertain. At the same time, paying too many stock dividends also dilutes share value. Alternatively, combining cash with stock dividends entitles investors to potential capital gains while guaranteeing a certain amount of cash returns and minimizing the dilution effect. Thus, it may explain why Chinese investors prefer combined dividends to pure stock or pure cash dividends.

2.4.3 The Effect of Earnings Surprise

In the above analysis, we have documented positive abnormal stock returns around stock dividend announcement dates. In order to rule out the possibility that it is the contemporaneously announced earning surprise that drives such positive abnormal returns, we investigate the effect of a concurrent earnings surprise in this section. We consider a positive and a negative earnings surprise. Following Chen*, et al.* (2002), we use earnings change as a measure for earnings surprise as there are no data on earnings expectations in China. The earnings surprise is then defined as the difference in net profits between the current and previous periods.

Table 2.4 compares [-5, 5] CARs for dividend paying and non-paying groups when a positive or negative earnings change is announced. The results show that higher CARs are associated with a positive earnings surprise. Specifically, for the dividend paying group, a positive average CAR of 1.27 percent is reported for a positive earnings surprise and a negative average CAR of -0.17 percent is observed for a negative surprise. The difference in CARs is highly significant at the 1% level. Similar patterns are observed for dividend paying subgroups as well as for the non-dividend paying group. All the differences in CARs are highly significant. These evidences suggest that earnings surprise (i.e., profit change) have a significant effect on stock returns.

[Insert Table 2.4 about here]

Results reported in Table 2.4 also give us indications about differences in announcement effects among dividend distribution groups given a positive or a negative earnings change. For example, within the sample of a positive earnings change, the dividend paying group experiences a

significantly higher CAR (1.27 percent) than the non-dividend paying group (0.04 percent). Among the three dividend paying subgroups, the highest average CAR of 3.32 percent is observed in the combined dividend group, followed by the stock dividend paying group (3.11 percent) and the cash dividend group (0.24 percent). A similar pattern is also observed within the negative earnings surprise sample. For example, the combined dividend firms on average still earn positive (1.89 percent) CAR despite the negative earnings news. Therefore, the superior announcement window CARs for combined and stock dividend firms is still present when positive or negative earnings surprises are taken into consideration.

2.4.4 Regression Analysis

The results of Table 2.4 are based on the univariate framework. To better control for different effects on announcement window returns, we now turn to multivariate regression analysis. Specifically, we estimate the following regression on the full sample and the respective subsamples:

$$CAR_{i,T} = \alpha + \beta_1 Payer + \beta_2 EarningSurprise + \beta_3 Log(TA) + \beta_4 EPS + \beta_5 IndustryDummies + \varepsilon_{i,T} \quad (2.1)$$

Where *Payer* equals 1 if firm *i* pays dividends and 0 otherwise, *EarningSurprise* is a proxy to control for earnings surprise, *Log(TA)* is log total assets, and *EPS* is earnings per share. Industry fixed effects are included to control for the possible industry differences. We use two proxies for earnings surprises. One proxy is *ΔEPS*, the change in earnings per share, following Benartzi, Michaely and Thaler (1997). Another proxy is *D_profits*, a dummy equals to 1 if the change in a firm's net profits is positive, and zero otherwise. *D_profits* is to capture the possible nonlinear return response to earnings surprise. The results are reported in Table 2.5 and Table 2.6. Table 2.5 reports the results using *D_profits* as a proxy. Table 2.6 reports results using *ΔEPS* as the proxy. In each table, Columns 1 to 4 report the regression results for the comparison subsamples. Column 5 reports the full sample pooled regression result.

Results in Table 2.5 confirm our findings in univariate analysis. In Table 2.5, the coefficient estimates on the positive earnings surprise dummy (*D_profits*) are all positive and significant across all the models. This suggests that earnings surprise has a significantly positive impact on CARs. When we compare different dividend payment forms pairwise to the no-paying group (column 2-4), we find that cash dividend has a positive but not significant coefficient, while stock dividend and combined dividend estimates are both positive and significant. In column 5, we run a pooled regression on the entire sample while breaking the dividend payers into different subgroups, using a dummy variable for each category. The resulting estimates are similar to the pairwise estimates.

Notably, the estimates on dummy variables *stock* and *combined* not only are statistically significant at 1% level, they are also economically significant. The coefficient estimate on pure stock dividend is 2.89, and on combined dividend is 3.19. Ceteris paribus, paying stock dividend earns a firm close to 3 percent in cumulative abnormal returns in the [-5, 5] event window, and about 3.2 percent when such stock dividends are combined with cash.

[Insert Table 2.5 about here]

Table 2.6 reports the similar set of regressions using the change in earnings per share to control for earnings surprise. Controlling for ΔEPS allows for the possibility that cumulative abnormal return is proportional to the magnitude in earning changes. The results are qualitatively similar to those of Table 2.5. Investors react positively to dividend payments, especially to the dividend payments consisting of a stock dividend component. Such positive market reaction to stock dividends cannot be attributed to the simultaneous earnings surprise. In contrast, estimate on the pure cash dividend payer dummy is close to zero (although positive) and is only marginally significant. Investors react indifferently towards cash dividend and no-dividend announcements.

[Insert Table 2.6 about here]

2.4.5 Earnings Surprise and Dividend Paying Status

We further split the dividend paying group into three subgroups according to the change in dividend paying status. The initiation group consists of firms initiating dividend payments (cash, stock or combined) in current period. The continuation group includes firms continuing the same type of dividends from last period to current period. Finally, the change-to group consists of payers that switch from one type of dividend payment to another since last period. We then explore the difference in CARs between subgroups and the results are reported in Table 2.7. Panel A presents the result for the full dividend paying sample while Panel B, C and D report the results for three dividend paying subsamples.

[Insert Table 2.7 about here]

On average, not surprisingly, all dividend payers experience higher CARs for a positive earnings surprise than that for a negative surprise, regardless of the change in the firms' paying status (Panel A). When we examine different dividend paying subgroups, several interesting patterns emerge. First stock dividend and combined dividend payers always have positive CARs regardless of earnings surprise or whether the dividend is initiated, continuing, or changed from other forms of payments. The same is not true for the pure cash dividend payers. For cash dividend payers, the significant difference in CARs between positive and negative earnings surprises is

observed only when a firm initiates or continues its cash dividends. Firms who switch into cash dividend from other forms of payments do not have differentiating CARs between positive and negative earnings. This corroborates the evidence that the market reaction towards stock dividends and combined dividends is much stronger than that towards cash dividends. Second, for stock dividend payers, the CAR is the highest (5.85 percent) when a switch to stock dividends and a positive earnings change are simultaneously announced. Looking at it another way, when firms switch to other forms of payment, the differentiation between positive and negative earnings is only significant (CAR difference=4.84) when firms switch into stock dividend. This suggests that switching from cash dividends to stock dividends reinforce the signaling effect of a positive earnings surprise, which is consistent with the finding by Chen *et al.* (2002). Finally, for the combined dividend payer, the average announcement CARs are higher when there is a concurrent positive earnings surprise than a negative earnings surprise. The difference in CARs is significant when the combined dividend is a continuing payment, but not significant when the dividend is initiated or switched from other categories. This is consistent with the hypothesis that combined dividend is a strong signal about future earnings. Its initiation or switching into that category has a stronger signaling effect than current earnings surprise. Only when the combined dividend is a continuing form of payment, current earnings surprise becomes a significant differentiating factor in market reactions. It is interesting to note here that while investors are more happy to see a firm switch into stock dividend when earnings surprise is positive (CAR=5.85%, Panel C), they are indifferent between positive and negative current earnings surprises when a firm switches into combined dividend (CAR=3.74% and 3.44%, Panel D).[4] This is consistent with our overall finding that combined dividend has the strongest signaling effect (see Figure 2.2). Current earnings surprise has less signaling power when firms switching into combined dividend than into other categories.

In summary, Table 2.4 to Table 2.7 provide evidence that the market reacts positively to stock dividend announcements. When we control for the effect of the concurrent earnings surprise, such announcement effect of stock dividends still exists. One interpretation is that stock dividends may convey strong signal about firm's future performance to the market. However, dividend paying status may change the extent of the earnings effect. Specifically, a switch to stock dividends strongly corroborates the earnings signal. By contrast, a switch to cash dividends tends to attenuate the effect of earnings surprise. In addition, the market reaction towards combined cash and stock dividends is the largest, compared with its two counterparts.

[4] We thank an anonymous referee to point this out.

2.5 Robustness Tests

As a robustness check, we measure the earning surprise in a different way. The earning surprise is now defined as the difference in relative profit changes (ΔEPS) between the current period and the last period. The results are provided in Table 2.8.

[Insert Table 2.8 about here]

In general, the results from the robustness test do not alter our major conclusions. For instance, a strong announcement effect of stock dividends is still observed in Table 2.8. Again, a switch to stock dividends reinforces the earnings signal while a switch to cash dividends tend to undermine the earnings effect.

2.6 Conclusion

Significant price increases around stock dividends announcements are well documented in the literature. In this chapter, we examine the announcement effect of dividend payments in China with a focus on stock dividend announcements.

We find that companies that choose not to pay dividends experience a significantly negative CAR over the announcement window. In contrast, dividend paying firms on average exhibit a significantly positive CAR. However, the positive announcement effect is mainly driven by distributions that include stock dividends. Investors react more positively to the combined dividend and stock dividend payouts and cash dividend appears to be least valued by the Chinese investors. These findings are robust to the effect of the earnings surprise concurrently announced. We also find that changes in stock dividend paying status tend to interact with differential in return creations to earnings surprise. For instance, a switch to stock dividends is likely to reinforce the earnings signal.

These findings are puzzling under the current dividend theories and our understanding of the Chinese capital market. If the explanation is in the Chinese investors' preference for stock dividends, then the challenge is in providing a rational explanation for that preference. Stock dividends after all are accounting cosmetics. Taxation difference between cash and stock dividends is unlikely to provide this explanation. If tax advantage is the reason investors prefer stock dividends over cash dividends, the same logic should also apply to no dividend payouts. We should not observe that dividends are preferred over no dividends or that combined cash and stock dividends are preferred over pure stock dividends.

Would the taxation cost or other signaling cost be able to explain the puzzle through a costly signaling model (Bhattacharya (1979); Miller and Rock (1985); John and Williams (1985))? It would imply that stock dividends have a higher cost than cash dividends to the Chinese firms. On the surface, that is not the case. For the signaling story to work, the answer might lie in the governance structure of the Chinese listed firms. The controlling state and legal person shareholders own the majority illiquid shares. They have little incentive to pay stock dividends as these additional shares are also illiquid. The reduction in accounting retained earnings also increases the firms' possible financing cost as various reserve funds need to be filled first. Their preference would be cash dividends which they can divert for other purposes. Wei and Xiao (2009) find that cash dividend level is significantly and positively related to the proportion of non-tradable shares. Therefore, a possible explanation of the puzzle is that stock dividend is a dual signal of good corporate governance and good future earnings prospect. We plan to explore this point in future studies.

Table 2.1 Comparing Financial Characteristics of Various Groups

This table reports differences in financial characteristics between dividend paying groups. All the figures in the table are mean value of the variables. Non-Dividend paying group consists of companies that do not pay dividend at all; dividend paying group consists of companies that paid either cash or stock dividend (or a combination of cash and stock dividends); pure cash dividend group consists of companies that paid cash dividend only; pure stock dividend group consists of companies that paid stock dividend only; combined dividend group consists of companies that paid a combination of cash and stock dividends. The sample period is between 1993 and 2006 and the data is collected from China Centre of Economics Research. Figures in parentheses are t-statistics based on White's Heteroskedasticity-robust standard errors. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

	Number of Observations	Total Assets (in mil$)	Net Asset per Share	Earnings per Share	Growth Rate in Earnings per Share	Price-Earnings Ratio
Non-Dividend Paying Group	5,697	$1,804	$2.14	$-0.01	-3.22	139.10
Dividend Paying Group	6,240	$3,254	$3.23	$0.32	0.41	53.46
- Pure Cash Dividend Only	3,988	$4,002	$3.15	$0.28	0.24	51.83
- Pure Stock Dividend Only	1,067	$1,324	$3.08	$0.31	0.78	68.10
- Combined Cash and Stock Dividend	1,185	$2,475	$3.64	$0.44	0.72	45.77
t-test between the Groups						
Difference between Dividend Paying and Non-dividend Paying Groups		$1,450*** (6.20)	$1.09*** (40.85)	$0.33*** (38.57)	3.63*** (11.30)	-85.64*** (-10.84)
Difference between Pure Cash Dividend and Other Dividend Paying Groups		$2,073*** (6.22)	$-0.23*** (-5.72)	$-0.09*** (-12.02)	-0.51 (-1.68)	-4.53 (-1.36)
Difference between Pure Stock Dividend and Other Dividend Paying Groups		$-2,329*** (-9.05)	$-0.18*** (-3.69)	$-0.01 (-0.60)	0.44 (1.64)	17.66*** (3.72)
Difference between Combined Dividend and Other Dividend Paying Groups		$-962*** (-3.34)	$0.51*** (10.20)	$0.15*** (13.23)	0.38 (0.75)	-9.50** (-2.24)

Table 2.2 Comparing Abnormal Returns and Cumulative Abnormal Returns between Dividend Paying and No Paying Groups

This table compares ARs and CARs between dividend paying and no paying groups. Event day, T=0, denotes the announcement date of dividend payments. The event period is five trading days before and after the event date. The sample period is between 1993 and 2006. Figures in parentheses are t-statistics based on White's Heteroskedasticity-robust standard errors. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Event Day	Dividend Paying Group (n=6,240)		Non-dividend paying Group (n=5,697)		Differences in CARs (%)
	AR (%)	CAR (%)	AR (%)	CAR (%)	(Paying - Non Paying)
T = -5	0.12***	0.12***	-0.17***	-0.17***	0.29***
	(4.21)	(4.21)	(-4.91)	(-4.91)	(6.47)
T = -4	0.16***	0.28***	-0.09**	-0.26***	0.54***
	(5.59)	(6.86)	(-2.40)	(-4.91)	(8.12)
T = -3	0.11***	0.39***	-0.11***	-0.36***	0.75***
	(3.95)	(7.85)	(-2.65)	(-5.35)	(8.98)
T = -2	0.17***	0.56***	-0.15***	-0.51***	1.07***
	(5.74)	(9.57)	(-4.05)	(-6.63)	(11.09)
T = -1	0.09***	0.66***	-0.11***	-0.61***	1.27***
	(2.93)	(9.66)	(-2.91)	(-7.17)	(11.63)
T = 0	-0.23***	0.43***	-0.50***	-1.11***	1.54***
	(-6.43)	(5.70)	(-10.56)	(-11.73)	(12.73)
T = 1	-0.04	0.39***	-0.31***	-1.42***	1.81***
	(-1.11)	(4.67)	(-7.61)	-13.64)	(13.55)
T = 2	0.02	0.41***	-0.02	-1.44***	1.85***
	(0.84)	(4.63)	(-0.73)	(-13.00)	(13.03)
T = 3	0.04	0.45***	-0.04	-1.48***	1.93***
	(1.48)	(4.80)	(-1.36)	(-12.67)	(12.88)
T = 4	-0.04	0.42***	0.01	-1.48***	1.90***
	(-1.41)	(4.25)	(0.23)	(-12.08)	(12.08)
T = 5	0.02	0.43***	0.01	-1.47***	1.90***
	(0.67)	(4.29)	(0.32)	(-11.70)	(11.81)

Table 2.3 Comparing Abnormal Returns and Cumulative Abnormal Returns among Dividend Paying Sub-groups

This table compares ARs and CARs among dividend paying sub-groups. Panel A reports the ARs and CARs for three dividend paying subgroups and Panel B reports their differences in CARs. Pure cash dividend group consists of those companies that paid cash dividends only; pure stock dividend group consists of those companies that paid stock dividends only; and combined dividend group consists of those companies that paid a combination of cash and stock dividends. Event day, T=0, denotes the announcement date of dividend payments. The event period is five trading days before and after the event date. The sample period is between 1993 and 2006. Figures in parentheses are t-statistics based on White's Heteroskedasticity-robust standard errors. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Panel A: ARs and CARs for the three dividend paying sub-groups

	Event Day	T = -5	T = -4	T = -3	T = -2	T = -1	T = 0	T = 1	T = 2	T = 3	T = 4	T = 5
Pure Cash Dividend (n=3,988)	*AR (%)*	0.04	0.05	0.03	0.02	-0.09**	-0.52***	-0.13***	0.06*	0.04	-0.04	-0.02
		(1.16)	(1.30)	(0.85)	(0.64)	(-2.45)	(-12.74)	(-3.41)	(1.67)	(1.39)	(-1.20)	(-0.48)
	CAR (%)	0.04	0.08*	0.11*	0.13**	0.05	-0.48***	-0.61***	-0.55***	-0.51***	-0.54***	-0.56***
		(1.16)	(1.73)	(1.90)	(1.98)	(0.63)	(-5.87)	(-6.72)	(-5.71)	(-4.96)	(-5.09)	(-4.97)
Pure Stock Dividend (n=1,067)	*AR (%)*	0.28***	0.38***	0.11	0.36***	0.21**	0.14	0.21**	-0.13*	0.04	0.05	0.18***
		(3.38)	(4.92)	(1.41)	(4.38)	(2.31)	(1.35)	(2.15)	(-1.71)	(0.65)	(0.77)	(2.69)
	CAR (%)	0.28***	0.66***	0.77***	1.13***	1.34***	1.48***	1.69***	1.56***	1.60***	1.65***	1.83***
		(3.38)	(5.80)	(5.68)	(6.89)	(6.90)	(6.89)	(7.10)	(6.15)	(6.13)	(6.15)	(6.63)
Combined Cash and Stock Dividend (n=1,185)	*AR (%)*	0.25***	0.36***	0.39***	0.49***	0.60***	0.42***	0.06	0.06	0.02	-0.12*	-0.02
		(3.98)	(5.20)	(6.01)	(6.79)	(7.13)	(4.86)	(0.75)	(0.80)	(0.25)	(-1.84)	(-0.34)
	CAR (%)	0.25***	0.61***	1.00***	1.49***	2.09***	2.51***	2.57***	2.63***	2.65***	2.53***	2.51***
		(3.98)	(6.28)	(8.30)	(10.47)	(12.20)	(13.25)	(12.00)	(11.23)	(10.53)	(9.62)	(9.61)

Panel B: Differences in CARs for the three dividend paying sub-groups

	Event Day	T = -5	T = -4	T = -3	T = -2	T = -1	T = 0	T = 1	T = 2	T = 3	T = 4	T = 5
Pure Cash Dividend vs. other Dividend Groups	*Differences in CARs (%)*	-0.22***	-0.55***	-0.78***	-1.19***	-1.69***	-2.50***	-2.76***	-2.68***	-2.66***	-2.66***	-2.75***
		(-3.65)	(-6.19)	(-7.21)	(-9.29)	(-11.28)	(-15.20)	(-15.05)	(-13.54)	(-12.76)	(-12.28)	(-12.46)
Pure Stock Dividend vs. other Dividend Groups	*Differences in CARs (%)*	0.19**	0.46***	0.45***	0.69***	0.83***	1.27***	1.57***	1.38***	1.39***	1.49***	1.69***
		(2.18)	(3.73)	(3.11)	(3.90)	(3.99)	(5.57)	(6.19)	(5.12)	(4.96)	(5.18)	(5.70)
Combined Dividends vs. other Dividend Groups	*Differences in CARs (%)*	0.16**	0.41***	0.75***	1.15***	1.77***	2.58***	2.70***	2.74	2.71***	2.61***	2.57***
		(2.28)	(3.77)	(5.66)	(7.34)	(9.50)	(12.53)	(11.63)	(10.85)	(10.04)	(9.25)	(9.09)

Table 2.4 Difference in CARs among the Groups Classified by Changes in Profits

This table reports the differences in [-5, +5] CARs among the groups, classified by change in Profits. Change in Profits is the difference between the current and previous periods' net profits per share. Cash dividend group consists of those companies that paid cash dividends only; Stock dividend group consists of those companies that paid stock dividends only; and combined dividend group consists of those companies that paid a combination of cash and stock dividends. Event day, T=0, denotes the announcement date of dividend payments. The event period is five trading days before and after the event date. The sample period is between 1993 and 2006. Figures in parentheses are t-statistics based on White's Heteroskedasticity-robust standard errors. *** denotes significance at 1% level.

	Dividend Paying vs. Non-paying Firms		Dividend Paying Firms		
	(1) Non-Dividend Paying group (%)	(2) Dividend Paying Group (%)	(3) Cash Dividend Paying Group (%)	(4) Stock Dividend Paying Group (%)	(5) Combined Cash and Stock Dividend Paying Group (%)
When Change in Profits ≤0	-2.40***	-0.17	-1.15***	1.12***	1.89***
	(-15.07)	(-1.29)	(-7.80)	(3.35)	(5.99)
Number of observations	3,527	3,643	2,287	684	672
When Change in Profits >0	0.04	1.27***	0.24	3.11***	3.32***
	(0.20)	(7.89)	(1.38)	(6.47)	(7.60)
Number of observations	2,170	2,597	1,701	383	513
Difference in CARs between Change in Profits ≤0 and >0	-2.44***	-1.44***	-1.39***	-1.99***	-1.43***
t-stat on the difference	(-9.50)	(-6.98)	(-6.13)	(-3.41)	(-2.65)

Table 2.5 Regression Analysis on Announcement Effect Controlling for *D_profits*

This table reports cross-sectional analysis on market reaction to the dividend announcement. The dependent variable is market-adjusted [-5, +5] cumulative abnormal return, where t=0 is the announcement date of dividend schedule. *TA* is the total assets; *EPS* is the net earnings per share; *D_profits* is a dummy variable and equal to 1 if the change in a firm's net profit is positive, zero otherwise*; Payer* is a dummy variable and equals to 1 for dividend-paying firms and zero otherwise; *Cash* is a dummy variable and equal to 1 if the dividend payment method is cash and zero otherwise; *Stock* is a dummy variable and equal to 1 if the dividend payment method is stock and zero otherwise; *Combined* is a dummy variable and equal to 1 if the dividend payment method is the combination of cash and stocks and zero otherwise. Column 1 reports the regression for the full sample; Column 2 reports the regressions for the subsample of cash dividend paying firms and non-dividend paying firms; Column 3 reports the regressions for the subsample of stock dividend paying and non-dividend paying firms; Column 4 reports the regressions for the subsample of the combined cash and stock dividend paying firms and non-dividend paying firms; Column 5 reports the regression for the full sample, but includes *Cash*, *Stock* and *Combined* in a single regression. All regressions include dummy variables for industries (finance, utilities, properties, conglomerate, and industrial). Figures in parentheses are t-statistics based on White's heteroskedasticity-robust standard errors. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1) Payers vs. Non-payers (%)	(2) Cash payers vs. Non-Payers (%)	(3) Stock Payers vs. Non-Payers (%)	(4) Combined vs. Non-payers (%)	(5) All (%)
Intercept	-2.60 (-1.53)	-6.01*** (-3.22)	-3.70 (-1.47)	-3.77 (-1.53)	-5.86*** (-3.42)
Log(TA)	0.02 (0.30)	0.19** (2.09)	0.07 (0.58)	0.08 (0.64)	0.18** (2.19)
EPS	1.74*** (9.44)	1.59*** (8.28)	1.86*** (8.51)	1.74*** (8.11)	1.52*** (8.26)
D_profits	0.02*** (10.08)	1.73*** (9.64)	2.01*** (8.48)	1.89*** (9.11)	1.69*** (10.38)
Payer	1.65*** (7.48)				
Cash		0.26 (1.40)			0.29 (1.53)
Stock			2.77*** (8.69)		2.89*** (9.85)
Combined				3.11*** (9.98)	3.19*** (11.12)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.03	0.02	0.04	0.05	0.04
Observations	11,903	9,664	6,751	6,870	11,903

Table 2.6 Regression Analysis on Announcement Effect Controlling for *ΔEPS*

This table reports cross-sectional analysis on market reaction to the dividend announcement. The dependent variable is market-adjusted cumulative abnormal return from t= -5 to t=5, where t=0 is the announcement date of dividend schedule. *TA* is the total assets; *EPS* is the net earnings per share; *ΔEPS* is the change in net earnings per share*; Payer* is a dummy variable and equals to 1 for dividend-paying firms and zero otherwise; *Cash* is a dummy variable and equal to 1 if the dividend payment method is cash and zero otherwise; *Stock* is a dummy variable and equal to 1 if the dividend payment method is stock and zero otherwise; *Combined* is a dummy variable and equal to 1 if the dividend payment method is the combination of cash and stocks and zero otherwise. Column 1 reports the regression for the full sample; Column 2 reports the regressions for the subsample of cash dividend paying firms and non-dividend paying firms; Column 3 reports the regressions for the subsample of stock dividend paying and non-dividend paying firms; Column 4 reports the regressions for the subsample of the combined cash and stock dividend paying firms and non-dividend paying firms; Column 5 reports the regression for the full sample, but includes *Cash*, *Stock* and *Combined* in a single regression. All regressions include dummy variables for industries (finance, utilities, properties, conglomerate, and industrial). Figures in parentheses are t-statistics based on White's heteroskedasticity-robust standard errors. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1) Payers vs. Non-payers (%)	(2) Cash payers vs. Non-Payers (%)	(3) Stock Payers vs. Non-Payers (%)	(4) Combined vs. Non-payers (%)	(5) All (%)
Intercept	-0.09 (-0.05)	-3.78* (-1.86)	0.07 (0.03)	0.21 (0.08)	-2.67 (-1.41)
Log(TA)	-0.06 (-0.66)	0.12 (1.21)	-0.07 (-0.52)	-0.07 (-0.58)	0.06 (0.71)
EPS	2.03*** (10.30)	1.91*** (9.36)	2.15*** (9.25)	2.09*** (9.20)	1.87*** (9.48)
ΔEPS	0.01** (2.30)	0.01** (2.39)	0.01* (1.85)	0.01* (1.78)	0.01** (2.40)
Payer	1.29*** (6.98)				
Cash		0.32 (1.55)			0.37* (1.77)
Stock			2.93*** (7.94)		3.01*** (8.86)
Combined				3.25*** (9.28)	3.27*** (10.19)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.02	0.02	0.03	0.04	0.04
Observations	10,481	8,765	6,080	6,242	10,481

Table 2.7 Difference in CARs among the Groups Classified by Changes in Profits and Dividend Paying Status

This Table reports tests on the difference in [-5, +5] CARs among the group, classified by change in Profits and dividend paying status. Change in Profits is the difference between the current and previous periods' net profits per share. *Continue* is a dummy variable equals 1 for continuing (cash, stock or combined) dividend payers from last period and zero otherwise; *Initiate* is 1 for newly initiated (cash, stock or combined) dividend payers (i.e., no dividend was paid last period) and zero otherwise; *Changeto* is 1 for payers that switch from cash (stock or combined) dividends in the last period to stock or combined (cash) dividends in this period and zero otherwise. Cash dividend group consists of those companies that paid cash dividends only; Stock dividend group consists of those companies that paid stock dividends only; and combined dividend group consists of those companies that paid a combination of cash and stock dividends. Event day, T=0, denotes the announcement date of dividend payments. The event period is five trading days before and after the event date. The sample period is between 1993 and 2006. Figures in parentheses are t-statistics based on White's heteroskedasticity-robust standard errors. *** and ** denote significance at 1% and 5% levels, respectively.

	Initiate (%)	Continue (%)	Changeto (%)
Panel A: All Dividend Paying Firms			
When Change in Profits ≤0	0.42	-0.70***	-0.05
	(1.40)	(-3.12)	(0.18)
	(N=711)	(N=1116)	(N=784)
When Change in Profits >0	1.22***	0.47**	3.24***
	(4.76)	(2.20)	(6.97)
	(N=899)	(N=1189)	(N=509)
Difference in CARs between Change in Profits ≤0 and >0	-0.80**	-1.17***	-3.29***
t-stat on the difference	(-2.05)	(-3.78)	(-5.85)
Panel B: Cash Dividend Paying Group			
When Change in Profits ≤0	-0.70*	-1.12***	-1.14***
	(-1.90)	(-4.60)	(-3.54)
	(N=420)	(N=848)	(N=507)
When Change in Profits >0	0.59*	0.14	-0.31
	(1.86)	(0.64)	(-0.48)
	(N=508)	(N=1064)	(N=129)
Difference in CARs between Change in Profits ≤0 and >0	-1.29***	-1.26***	-0.83
t-stat on the difference	(-2.66)	(-3.87)	(-1.15)
Panel C: Stock Dividend Paying Group			
When Change in Profits ≤0	2.25***	0.18	1.01
	(3.28)	(0.23)	(1.26)
	(N=154)	(N=111)	(N=138)
When Change in Profits >0	1.61***	2.27*	5.85***
	(2.79)	(1.93)	(6.06)
	(N=203)	(N=52)	(N=128)
Difference in CARs between Change in Profits ≤0 and >0	0.64	-2.09	-4.84***
t-stat on the difference	(0.72)	(-1.49)	(-3.88)
Panel D: Combined Cash and Stock Dividend Paying Group			
When Change in Profits ≤0	1.73**	1.04*	3.44***
	(2.41)	(1.72)	(5.12)
	(N=137)	(N=157)	(N=139)
When Change in Profits >0	2.51***	3.97***	3.74***
	(4.09)	(3.86)	(5.33)
	(N=188)	(N=73)	(N=252)
Difference in CARs between Change in Profits ≤0 and >0	-0.78	-2.93**	-0.30
t-stat on the difference	(-0.83)	(-2.58)	(-0.30)

Table 2.8 Difference in CARs among the Paying firms Classified by Difference in Relative Profit Change and Dividend Paying Status

This Table reports mean difference in [-5, +5] CARs and test statistics among the group, classified by difference in relative profit change and dividend paying status. Difference in relative profit change is the difference in relative profit changes between the current and previous periods. *Continue* is a dummy variable equals 1 for continuing (cash, stock or combined) dividend payers from last period and zero otherwise; *Initiate* is 1 for newly initiated (cash, stock or combined) dividend payers (i.e., no dividend was paid last period) and zero otherwise; *Changeto* is 1 for payers that switch from cash (stock or combined) dividends in the last period to stock or combined (cash) dividends in this period and zero otherwise. Cash dividend group consists of those companies that paid cash dividends only; Stock dividend group consists of those companies that paid stock dividends only; and combined dividend group consists of those companies that paid a combination of cash and stock dividends. Event day, T=0, denotes the announcement date of dividend payments. The event period is five trading days before and after the event date. The sample period is between 1993 and 2006. Figures in parentheses are t-statistics based on White's heteroskedasticity-robust standard errors. *** and ** denote significance at 1% and 5% levels, respectively.

	Initiate (%)	Continue (%)	Changeto (%)
Panel A: All Dividend Paying Firms			
When Difference in Relative Profit change ≤0	0.27	-0.60**	0.39
	(0.94)	(-2.55)	(1.36)
	(N=779)	(N=1163)	(N=832)
When Difference in Relative Profit change >0	1.42***	0.39*	2.97***
	(5.40)	(1.89)	(6.06)
	(N=831)	(N=1142)	(N=461)
Difference in CARs between Relative Profit change ≤0 and >0	-1.15***	-0.99***	-2.58***
t-stat on the difference	(-2.97)	(-3.15)	(-4.55)
Panel B: Cash Dividend Paying Firms			
When Difference in Relative Profit change ≤0	-0.60	-1.10***	-1.20***
	(-1.59)	(-4.34)	(-3.74)
	(N=443)	(N=904)	(N=481)
When Difference in Relative Profit change >0	0.57*	0.15	-0.10
	(1.91)	(0.72)	(-0.23)
	(N=485)	(N=1008)	(N=155)
Difference in CARs between Relative Profit change ≤0 and >0	-1.17***	-1.25***	-1.10*
t-stat on the difference	(-2.46)	(-3.74)	(-1.65)
Panel C: Stock Dividend Paying Firms			
When Difference in Relative Profit change ≤0	1.22**	0.45	1.54**
	(2.07)	(0.57)	(2.01)
	(N=168)	(N=107)	(N=152)
When Difference in Relative Profit change >0	2.47***	1.61	5.73***
	(3.83)	(1.36)	(5.46)
	(N=189)	(N=56)	(N=114)
Difference in CARs between Change in Profits ≤0 and >0	-1.25	-1.16	-4.19***
t-stat on the difference	(-1.42)	(-0.84)	(-3.23)
Panel D: Combined Cash and Stock Dividend Paying Firms			
When Difference in Relative Profit change ≤0	1.61**	1.65**	3.45***
	(2.52)	(2.51)	(5.85)
	(N=168)	(N=152)	(N=199)
When Difference in Relative Profit change >0	2.79***	2.60***	3.82***
	(4.11)	(2.84)	(4.53)
	(N=157)	(N=78)	(N=192)
Difference in CARs between Relative Profit change ≤0 and >0	-1.18	-0.95	-0.37
t-stat on the difference	(-1.27)	(-0.85)	(-0.36)

Figure 2.1 Cumulative Abnormal Returns between Dividend Paying and No Paying Groups

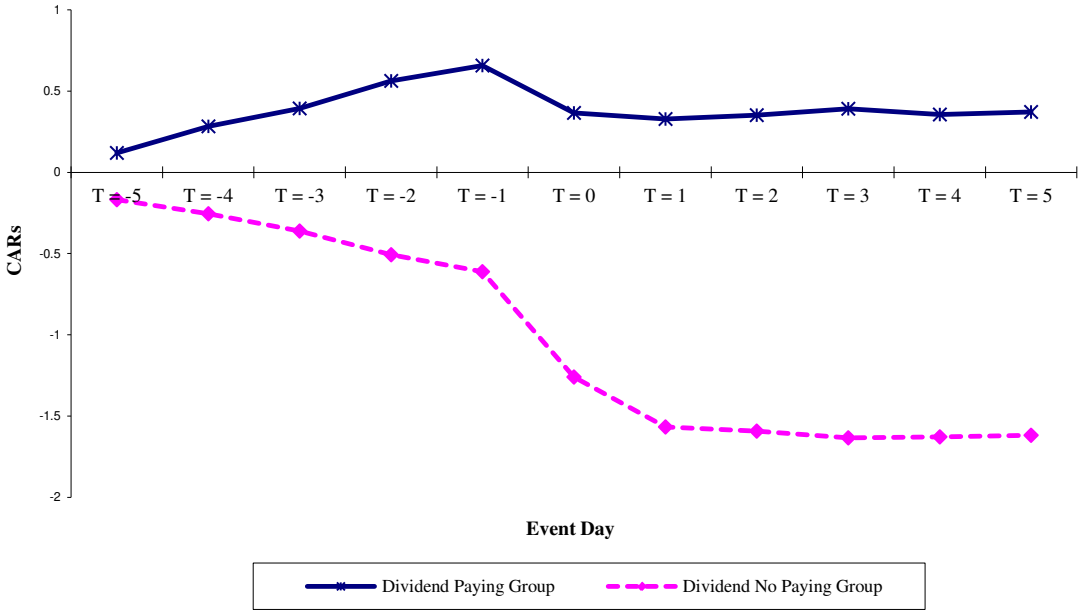
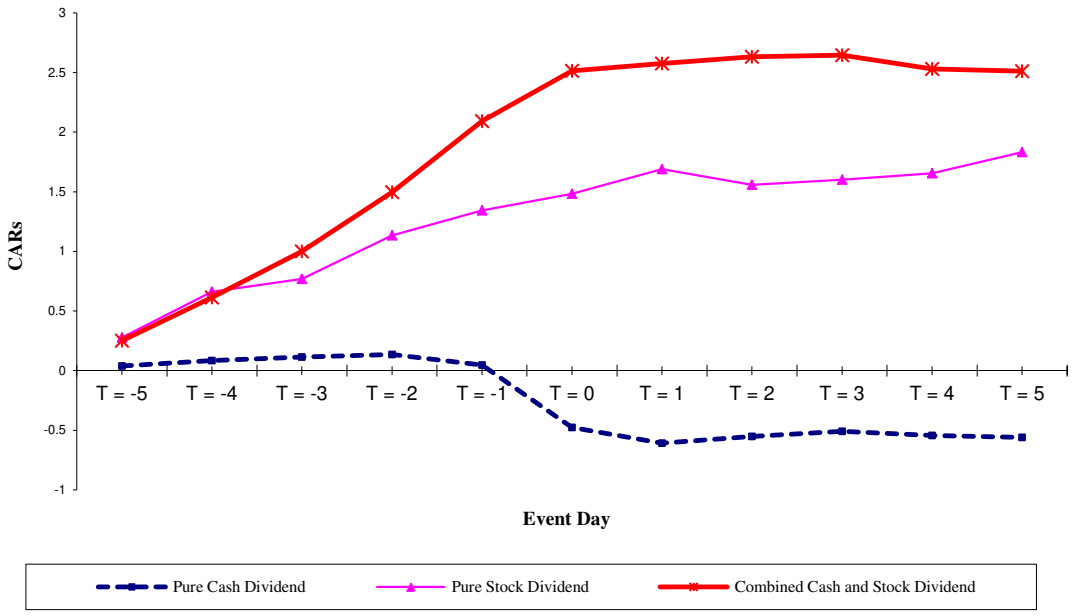


Figure 2.2 Cumulative Abnormal Returns among Dividend Paying Sub-groups



Chapter 3 Dividend Policy, Corporate Governance and Stock Liquidity

3.1 Introduction

Why do firms pay dividends? The irrelevance proposition developed by Miller and Modigliani (1961) established the foundation for the contemporary study of dividend policy. Classical M&M theory states that what is truly important is a firm's investment policy and that the dividend is merely the residual between earnings and investments and is thus irrelevant to firm value. However, considerable empirical evidence shows that both managers and markets do care about dividends and that firm value changes in a manner consistent with dividend policy. Therefore, the dividend literature in the past forty years has attempted to reconcile the M&M irrelevance theorem with the empirical evidence by relaxing the assumptions on which the irrelevance proposition is based. Such studies consider the role of taxes, agency relationships, and asymmetric information, among other factors.

Agency theory posits that the incentives of management are likely to differ from those of stockholders. Managers may allocate resources to activities for their own benefits but not necessarily in the best interest of stockholders. For example, an excessive amount of cash in a firm can result in overinvestment. One solution to this problem is to increase the level of dividends to take the free cash flow from the firm (Grossman and Hart (1980); Easterbrook (1984); Jensen (1986)). These theories suggest a significant deviation from the M&M dividend irrelevance proposition because paying more dividends increases firm value by reducing potential overinvestment and is favorably received by investors.

The assumption embedded in the original M&M proposition is that investors are not constrained by liquidity. When capital markets are perfect and when there is no asymmetric information, trading is frictionless, and investors with liquidity needs can thus create homemade dividends at no cost by selling an appropriate amount of their holdings in the firm. However, trading is not frictionless in real financial markets. Investors must either provide a price concession for an immediate execution or wait some time for an optimal execution.[5] In an extreme form, the existence of trading constraints does not allow investors to freely sell their shares in the secondary market to satisfy their liquidity needs. In a less extreme form, investors must account for liquidity costs in the possible liquidation of stocks.

This chapter examines how corporate governance and stock liquidity affect corporate dividend payouts in the context of an exogenous policy shock, the Chinese 2005 split-share structure reform.

[5] Investors must also pay trading commissions.

The split-share structure reform mandated the conversion of non-tradable shares (NTS) into tradable shares (TS), constituting an exogenous shock to firms' governance that facilitated better alignment of the interests of controlling shareholders with those of outside investors, resulting in an improvement in firms' corporate governance. Moreover, the reform removed a substantial trading constraint. Because of the reform, stock liquidity is more closely related to the interests of controlling shareholders, who can sell some of their shares for liquidity needs and benefit from share price appreciation. We investigate the implications of share reform-induced governance and liquidity improvements for corporate dividend policy. First, we examine how listed firms' dividend policy responds to a governance and liquidity shock (i.e., the split-share structure reform) by comparing corporate dividend policy before and after the reform. Second, we explore the channels through which the reform affects corporate dividend policy by considering the effect of corporate governance and stock liquidity. The point regarding the effect of liquidity on dividends is relatively new, partly because non-tradability is less of an issue in the more mature markets.

The traditional approach to testing for the governance effect is cross-sectional, such as the approach used by La Porta*, et al.* (2000). Those researchers propose two agency models of dividends. Specifically, the "outcome model" hypothesizes that dividends result from minority shareholders using their legal powers to extract cash from corporate insiders. Alternatively, in the "substitute model," the payment of dividends is a substitute in the absence of legal protection for shareholders. Because of the need to seek external finance at some point in time, firms pay dividends to build their reputation for good shareholder treatment. La Porta*, et al.* (2000) show that dividend payouts are higher on average in countries with stronger legal protection of minority shareholders. Their findings lend support to the "outcome" agency model.

Some studies also adopt an approach based on firm fixed effects. For example, Mitton (2004) investigates dividend policies in emerging markets and concludes that firms with better governance pay higher dividends. A limitation of the previous studies is that their results can be attributed to selection bias. For example, a firm could choose to improve its governance, and hence, the improvement is endogenously determined, which may affect any inference drawn. In this study, an exogenous event (i.e., the split-share reform) provides a quasi-natural experiment and mitigates endogeneity concerns.

Many studies attempt to establish a link between dividend policy and stock market liquidity. Banerjee, Gatchev and Spindt (2007) show that firms with less liquid stock are more likely to pay dividends, indicating that investors view dividends and liquidity as substitutes. In a similar paper, however, Igan, de Paula and Pinheiro (2010) suggest the opposite relationship: dividend-paying

firms are associated with greater stock liquidity. Despite their discrepancies, both studies suffer from the issue that stock liquidity and dividend policy can be endogenously determined by other forces in firms' operating environments. Hence, the question of whether stock liquidity has an effect on dividend policy remains a largely empirical issue, and its investigation is one of the aims of our study. The main feature that distinguishes our paper is that we take advantage of an exogenous event that may have a bearing on this effect (i.e., the split-share structure reform) and avoid the potential inference problem.

For several reasons, the split-share structure reform offers a unique setting that allows us to test the relationship among corporate governance, stock liquidity and corporate payouts. First, the reform provides a quasi-natural experimental setting that allows us to compare the relationship in the pre- and post-reform periods. Second, the setting helps to avoid endogeneity bias and provides clear identification of the effects of governance and liquidity on corporate dividend policy. The reform was mandatory and dominated by the Chinese government. Although the reform altered the exchangeability of NTS throughout the entire market, it had a relatively small effect on firms' operating, financing, and investment opportunities. The reform thus provides us with a desired setting for the analysis. Third, the reform restricted the number of firms entering the reform at any given time. Thus, we can apply a difference-in-differences approach to identify the effect of the reform by isolating the time-specific changes. Fourth, the reform applied to both state- and privately controlled firms. Hence, we have an opportunity to cleanly measure the net effect of the reform.

When China reintroduced its two stock exchanges in 1991, it imposed a regulation on share ownership. For all listed companies, approximately two-thirds of their shares were held in the form of NTS (primarily held by state governments), and only approximately one-third of shares (primarily held by individual investors) were tradable. The NTS entitled holders to the same voting rights but could not be traded publicly. This dual-share structure caused serious corporate governance problems (i.e., ineffective boards and the expropriation of minority investors), which have jeopardized the development of the capital market.[6]

In April 2005, the Chinese authorities launched a stock market reform program in which NTS gradually became tradable. The reform for Chinese firms was staggered over time. By the end of 2007, approximately 98% of listed firms had completed the reform. Upon completion of the reform, there would theoretically be no fundamental difference in terms of pricing and valuation between the Chinese stock market and international markets.

[6] For instance, TS holders are normally minority shareholders who are unlikely to influence management decisions. Furthermore, given their inability to trade, NTS holders are relatively less sensitive to stock price movement. In addition, NTS limit market liquidity, resulting in a more volatile market.

The reform represents an exogenous shock to improve corporate governance through an enhanced role of minority investors and a more vibrant market for corporate control. The reform facilitated better alignment of the interests of controlling shareholders with those of outside investors. The reform also removed a liquidity constraint, which in turn reduced controlling shareholders' demand for cash dividends.[7] In addition, the ability of NTS holders to trade their shares publicly aligned the incentives of controlling shareholders with firm value, leading to a reduction in expropriating behavior.[8]

Using a panel of 1,275 listed non-financial firms in China over the 2003-2011 period, we find that the average cash dividend payout decreases in the post-reform period and that the reduction in cash payouts appears to apply more to firms with higher growth rates and higher liquidity. Given the fundamental difference in controlling shareholders between state-controlled and privately controlled firms, the reduction in cash payouts appears to be more substantial in state-controlled firms. Our results are robust to different time horizons surrounding the reform. These findings are largely consistent with the view that the split-share structure reform is associated with improvements in corporate governance and stock liquidity.

We also investigate whether the reform affects the decisions of firms to pay cash dividends. The results indicate that the propensity to pay cash dividends decreases significantly after the reform. Furthermore, the post-reform period features a decrease in the probability of initiating a cash dividend and a greater likelihood of firms omitting cash dividends. In addition, firms tend to pay a lower level of dividends in the post-reform period when they maintain dividend payments.

Our study offers a number of contributions. First, by providing insights into the effect of corporate governance and stock liquidity on dividend policy, this study complements prior work on dividend policy. Second, using the split-share structure reform as a quasi-natural experiment, our study contributes to the literature by identifying a setting in which firms experience an exogenous shock to their governance systems, which enables us to identify the causal effect of governance on dividend policy. Third, we study a novel channel in which an exogenous liquidity shock (triggered by the reform) exerts influence on firms' dividend decisions beyond the straightforward governance channel. Most of the previous empirical studies focus on the governance effect on dividend policy while neglecting the effect of stock liquidity. Our study fills this gap in the literature. Fourth, from a methodological perspective, our setting avoids inference problems arising from the concern that

[7] Prior to the reform, given that NTS could not be traded in the market, the only way to distribute company profits to controlling shareholders was through cash dividends.

[8] The expropriation by NTS holders can take the form of giving up subscription rights and using receipts from rights offering to pay huge cash dividends. This is equivalent to sell a proportion of NTS to TS holders at a price much higher than that in private negotiation (Lee and Xiao (2004)).

both dividend policy and corporate governance arrangements can be endogenous responses to forces in firms' operating environments that are unobservable to researchers. Finally, our findings advance the knowledge of corporate dividend policy in emerging economies by providing evidence from the Chinese capital market.

The remainder of this chapter is organized as follows. Section 3.2 describes the institutional environment that provides the setting for our analysis, and Section 3.3 reviews the related literature. The development of our hypotheses is presented in Section 3.4. Section 3.5 describes the data and our sample. Our empirical results are reported in Section 3.6. Section 3.7 describes the robustness check, and the final section concludes the chapter.

3.2 Institutional Background

3.2.1 The split-share structure reform

In 1990, the Chinese government began to partially privatize state-owned enterprises on the Shanghai and Shenzhen Stock Exchanges. Shares in listed firms were issued to public investors, employees, legal entities and the state government. However, the Chinese government often retained control of listed firms through controlling share positions held in the form of a non-tradable class of shares. Trading these NTS was prohibited in the secondary market.[9] Approximately two-thirds of NTS were held by government agencies, state-owned enterprises (SOEs) and legal entities. By contrast, TS were held by diverse minority shareholders, such as mutual funds, pension funds, private firms and individuals. Generally, controlling shareholders in Chinese listed firms were typically NTS holders.[10] The trading restriction on NTS affected stock liquidity, resulting in a significant market friction.

On April 29, 2005, the China Securities Regulatory Commission (CSRC, the equivalent of the Securities and Exchange Commission in the U.S.) launched a stock market reform program in which NTS gradually became tradable. Each firm was required to propose a reform plan to change the status of NTS.

To prevent NTS holders from benefiting at the expense of TS holders (who face a flood of shares into the secondary market), the announcement further specified that over a period of trading suspension, NTS holders must negotiate with TS holders on the level of compensation (in the form

[9] Although it was impossible to trade NTS in the secondary market, the transfer of NTS was possible through irregularly scheduled auctions and over-the-counter transactions, and the trade price was normally close to net asset values.

[10] According to Huang, Shen and Sun (2011), TS accounted for an average of only approximately one-third of the total shares during their sample period.

of stock grants or both cash and stock grants) that they will pay to TS holders for the right to sell their shares in the future.

To stabilize the stock market, the CSRC further imposed a 12-month lockup to restrict NTS holders from selling their shares after the completion of the reform. In the two years following expiration of the lockup, NTS holders owning more than 5% of a firm were allowed to sell only a maximum of 5% and 10% of the firms' total shares within a period of 12 and 24 months, respectively.

3.3 Literature Review

3.3.1 Corporate governance and dividend policy

In traditional agency theory, agency problems arise from the conflicts of interest between management and stockholders because the incentives for management are likely to differ from those for stockholders. Management teams can allocate resources to activities that benefit themselves but are not in the best interest of stockholders. For example, an excessive amount of in a firm can lead to potential overinvestment. Jensen and Meckling (1976) and Easterbrook (1984) observe that an increase in dividends mitigates agency problems and leads to higher firm value because managers have less free cash flows to invest in negative net present value projects. Hence, agency theory predicts that cash dividend payments increase with free cash flow but decrease with the growth opportunities of firms (Jensen (1986)). Consistent with these theories, Twite, Shi, He and Li (2012) report that Chinese listed firms that have higher cash holdings are more likely to pay cash dividends than are other firms. Given that agency problems are prominent in Chinese listed firms, the need to mitigate agency conflicts could partially motivate NTS holders to prefer cash dividends.[11]

Shleifer and Vishny (1997) argue that in many large companies around the world, conflicts of interest between management and outside investors, such as minority shareholders, may not be the major source of agency problems. Instead, agency problems can arise from the conflicts of interest between minority shareholders and controlling shareholders who can exert considerable influence on management's decision making. Controlling shareholders who control corporate assets can use these assets for a range of purposes that are detrimental to the interests of minority shareholders. For example, controlling shareholders can divert corporate assets to themselves or implement corporate policies that provide them with personal benefits of control at the expense of minority shareholders.

[11] Given that controlling shareholders in Chinese listed firms are typically NTS holders and given that TS holders are normally minority shareholders who are unlikely to affect management decisions, the preferences of NTS holders tend to dominate firms' dividend policy.

In the context of the split-share structure, NTS holders are typically the controlling shareholders in Chinese listed firms. They have both the power and incentives to expropriate corporate wealth at the expense of minority shareholders (normally TS holders). Given the overwhelming shareholding of NTS holders, paying huge cash dividends can be a legal vehicle to exploit minority shareholders. Many Chinese studies document the expropriation behavior of NTS holders through large cash dividend payments (see Lee and Xiao (2004); Tang and Luo (2006); Tang and Xie (2006); Wang, Li and Lu (2007); Yan (2004); Yuan (2001); Zhang and Xu (2006)).[12]

3.3.2 Stock liquidity and dividend policy

The link between dividend policy and stock liquidity can be traced back to Miller and Modigliani (1961). Under the assumption of perfect capital markets, investors with liquidity needs do not have to bear any direct or indirect costs of trading when liquidating their investment in a firm. When trading friction exists in financial markets, stocks that pay cash dividends allow investors to satisfy their liquidity needs with less or no trading, thus enabling them to mitigate trading costs. Dong, Robinson and Veld (2005) present survey evidence that individual investors prefer cash dividends, partly because their transaction costs involved in selling shares are higher than the costs of cashing in dividends. Therefore, in markets with trading friction, firms with less liquid stocks offer investors more dividends to compensate for higher levels of trading friction, which is the intuitive implication of the "liquidity hypothesis of dividends" in Banerjee*, et al.* (2007).

Brav, Graham, Harvey and Michaely (2005) survey 384 CFOs and treasurers primarily from U.S. companies and conduct 23 in-depth interviews with executives on their payout policies. Their results suggest that the liquidity of firms' stocks is an important factor affecting their payout decisions. For example, repurchases may be curtailed if managers believe that repurchases would reduce liquidity below a critical level. If such firms decide to distribute cash dividends rather than repurchase shares, then their behavior is consistent with the liquidity hypothesis of dividends. More directly, Banerjee*, et al.* (2007) show that firms with less liquid shares are more inclined to pay dividends compared with firms with more liquid shares. Their evidence provides empirical support for the liquidity hypothesis of dividends. Igan*, et al.* (2010) also investigate the interaction between stock liquidity and dividend policy, but they suggest an opposite relationship: dividend-paying firms are associated with greater stock liquidity.[13] Despite their discrepancies, both studies suffer from the issue that stock liquidity and dividend policy can be endogenously determined by other

[12] Note that the expropriation behavior of NTS holders can be affected by the split-share structure reform and that this change may result in subsequent change in firms' dividend policy. We will leave it to our future research.
[13] The discrepancies arise primarily because all regressions in Banerjee*, et al.* (2007) are conducted on sub-samples partitioned by different time periods, whereas Igan*, et al.* (2010) focus on the entire sample period.

forces in firms' operating environments. By using the split-share structure reform as an exogenous shock that affected only the liquidity of firms' stocks but had no effects on other factors unrelated to liquidity, our study avoids the potential inference problem and provides insight into the causal effect of stock liquidity on firms' payout decisions.

Before the split-share structure reform in the Chinese stock market, given the existence of trading constraints, NTS -holders could neither sell their shares in the secondary market nor benefit from capital gains arising from share price changes; thus, cash dividends represented the primary source of liquidity for NTS holders. As a result, NTS holders tend to demand high cash dividends to compensate for the liquidity constraint. Huang*, et al.* (2011) provide empirical evidence that the cash dividend level in Chinese listed firms is significantly and positively correlated with the proportion of NTS.

3.3.3 State-controlled vs. privately controlled firms

The nature of ownership is believed to have a considerable effect on firms' dividend policy. In the context of the Chinese market, previous studies find that state-controlled firms pay higher cash dividends than privately controlled firms do (see, e.g., Gao (2009); Hu and Huang (2005); Ma, Huang and Xue (2005); Song and Li (2007); Wu and Zhai (2013); Yu, Chen and Sun (2010)).

The incentive to pay cash dividends also differs between state-controlled and privately controlled firms (Lv and Zhou (2005)). Empirical evidence suggests that state-controlled firms pay high cash dividends to limit managerial entrenchment behavior and to reduce agency costs (Xu, Xin and Chen (2006)). For historical reasons, state-controlled firms in China are well known for their acute owner-manager agency problems because of the vaguely defined state ownership rights and the delegation of management and monitoring functions to bureaucrats whose interests are not well aligned with those of shareholders. More precisely, in state-controlled listed firms, state shareholders are virtually represented by government agencies or officials who are nominated by the government. Although these government agencies and officials possess actual control of state assets, the cash flow rights do not belong to them because they are paid by the government, and their remuneration and rewards are unrelated to the performance of the listed firms that they oversee. As a consequence, state shareholders have no incentive to actively participate in the management of state-controlled listed firms. Therefore, the virtual absence of state shareholders renders the supervision and monitoring of managers ineffective (Liao and Fang (2005)). In addition, state shareholders, especially government officials, typically have no relevant industry experience and thus lack both the necessary skills to effectively monitor listed firms' managers and the knowledge necessary to provide strategic advice (Chen, Firth and Xu (2009)). Therefore, state shareholders

have neither the incentive nor ability to efficiently monitor managers in listed firms. In this sense, the agency problem between state shareholders and management is prominent in state-controlled firms, and the corporate governance in such firms is relatively weak.

By contrast, expropriation is less likely to be an incentive for large dividend payments in state-controlled firms. Given their nature as government agents, state shareholders generally have substantial non-price considerations, such as a wish to meet certain political and social welfare objectives. Moreover, state shareholders are subject to monitoring by the state. Hence, the incentive and ability for a state shareholder to expropriate wealth away from minority shareholders via large cash dividends is diminished by the its general nature as an organization with its own system of internal controls (Lin, Cai and Li (1998)).

In firms that are controlled by private investors, controlling shareholders often install themselves or their representatives as the CEO or chairman of listed firms; therefore, management is actively monitored by these private shareholders. Meanwhile, these private controlling shareholders normally have detailed knowledge of the industry in which the firm operates; thus, they find it easier to be involved in the management function and to monitor hired managers more effectively (Chen*, et al.* (2009)). Therefore, agency problems associated with the separation of ownership and management are smaller in privately controlled listed firms than in state-controlled firms. A much larger concern in such firms is the expropriation incentive of controlling shareholders. Specifically, in contrast to state-controlled firms, privately controlled firms are not subject to state monitoring or government intervention. Controlling shareholders thus have more opportunity to expropriate corporate wealth. More importantly, private controlling shareholders are expected to focus on maximizing returns, including pursuing the private benefits associated with diverting corporate assets to themselves or paying large amounts of cash dividends. Therefore, cash dividends are more likely to be used by controlling shareholders as a means of expropriation in privately controlled firms.

3.3.4 The split-share structure reform

Research on the split-share structure reform generally focuses on whether the split-share structure reform is associated with positive outcomes. Chen, Chen, Schipper, Xu and Xue (2012) find that the split-share reform results in lower cash holdings and higher market valuations of cash holdings, suggesting that better governance has followed the reform. Campello, Ribas and Wang (2010) also report post-reform improvements in the profitability, productivity, and investments of firms.

Another stream of studies focuses on the effect of corporate governance on the reform process, particularly the compensation paid by NTS holders to TS holders. With better governance standards, including stronger shareholder protection, TS holders are willing to accept a relatively lower level of compensation (Jin and Yuan (2008)).[14] Evidence shows that the compensation ratio is negatively associated with firms' pre-reform corporate governance levels (see, e.g., Jin and Yuan (2008); Zheng, Sun, Tan and Jiang (2007)).[15] In relation to this finding, Xin and Xu (2007) observe that firms with better external governance environments tend to have lower compensation ratios.

3.4 Hypothesis Development

In this chapter, we study how corporate governance and stock liquidity affect corporate dividend policy by investigating the effect of the split-share reform on cash dividends. The reform has occurred through two channels: a governance channel and a liquidity channel.

By removing a significant market friction, the split-share structure reform represents an exogenous shock to firms' governance systems that facilitated better alignment of the interests of controlling shareholders (i.e., holders of previously NTS) with those of outside investors (holders of TS). NTS holders are now able to sell their shares in the secondary market and thereby realize the benefits of stock price appreciation. This ability provides controlling shareholders with an incentive to care about share value, which in turn encourages them to take value-maximizing actions for the firm as a whole, including eliminating or reducing expropriating behaviours via large cash distributions. Moreover, because controlling shareholders' ownership will be diluted through the conversion process (which typically entails share compensation), it becomes more costly for NTS holders to benefit from dividend payouts. Therefore, cash dividends distributed for an expropriation purpose are expected to decrease after the reform.

However, in the post-reform period, when NTS become tradable, the wealth of controlling shareholders became closely related to stock prices. Accordingly, controlling shareholders tend to monitor managers more actively and provide more strategic advice. In addition, given the tradability of NTS after the reform, the competitive takeover market was unfrozen, allowing for the

[14] According to Gompers, Ishii and Metrick (2003) and Bai, Liu, Lu, Song and Zhang (2005), firms with better corporate governance have higher firm value because investors are willing to pay a considerable premium for better governance, including stronger shareholder protection. Consequently, investors expect that the future (post-reform) price will be higher for firms with better pre-reform corporate governance than for weakly governed firms and that the adverse price impact from the supply of converted shares will be mitigated (Jin and Yuan (2008)). In addition, if TS holders are subject to expropriation before the reform as a result of low governance levels and weak shareholder protection, they are more likely to use the classified voting system (i.e., the compensation plan must be approved by at least two-thirds of voting TS holders before it is passed) to demand higher compensation to protect themselves.

[15] This strand of literature also provides support for our use of the compensation ratio as a proxy for firms' corporate governance level.

replacement of inept managers. Poorly performing firms are more prone to be the targets of takeovers. The threat of being taken over provides managers with better incentives to increase efficiency and enhance firm performance. Hence, agency costs should decrease after the reform, and consequently, the need to pay cash dividends (as a means of curtailing agency problems) should also decline.

Notably, because the split-share structure reform removed liquidity constraints on NTS, NTS holders are able to receive both dividends and capital gains in the post-reform period. This ability allows investors to create "home-made" dividends, which in turn reduces NTS holders' demand for cash dividends. Therefore, we hypothesize as follows:

H1: The average dividend payout decreases in the post-reform period.

State-controlled firms in China are well known for their acute owner-manager agency problems. Vaguely defined state ownership rights discourage state shareholders from actively monitoring managerial behaviors, and the delegation of management and monitoring functions to bureaucrats whose interests are not well aligned with shareholder interests creates further problems. Moreover, under the dual-share structure, executives in state-controlled firms do not behave in the best interests of TS holders because such executives are typically nominated and employed by NTS holders (i.e., the central or local government), and their promotion depends largely on how well they execute the instructions of the government rather than on how much they contribute to creating firm value. This structure has fostered agency problems.

By contrast, in privately controlled firms, controlling shareholders often install themselves or their representatives as the CEO or chairman of listed firms, and management is thus actively monitored by these private shareholders. Therefore, privately controlled firms are more efficient than state-controlled firms, and agency problems are more severe for state-controlled firms. As argued by Sheshinski and López-Calva (2003), transferring state ownership to private ownership should result in significant efficiency gains.

The split-share structure reform dismantled the dual-share structure of the Chinese market. For state-controlled firms, the reform unfroze the transferring of ownership and effectively mitigated state shareholders' moral hazard problems by aligning their control and cash flow rights. The agency costs of state-controlled firms are expected to decrease significantly after the reform. Therefore, compared with privately controlled firms, state-controlled firms have more severe pre-reform agency conflicts and will experience greater reductions in their cash dividends after the reform. Hence, we propose the following hypothesis:

H2: The decline in cash dividends is more significant in firms that are controlled by state shareholders.

We also investigate how the effect of the reform on cash dividends varies with firm-specific characteristics that capture corporate governance and stock liquidity. Before the reform, as stated above, controlling shareholders generally preferred cash dividends regardless of firms' growth opportunities because cash dividend payments were generally the primary source of returns, given that their shares could not be traded in the open market. Hence, paying cash dividends met the demands of large shareholders but consumed cash and reduced the internal funds available for investment opportunities. The reform dismantled the dual-share structure, and the wealth of large shareholders became more closely tied to stock prices. Thus, the payment of dividends could be directly affected by a firm's growth potential and investment needs. As a result, firms with higher growth experience the effects of the share reform mainly through the governance channel. Thus, we predict greater decreases in cash dividends in high-growth firms because these firms are more likely to have benefitted directly from governance improvements prompted by the reform.

Amihud and Mendelson (1986) suggest that the owners of illiquid shares incur additional trading costs (i.e., searching, negotiation and transaction). For instance, the difficulty in selling an illiquid stock induces a high transaction cost (i.e., a higher bid-ask spread), which results in a higher cost of capital and a lower stock price, if all other factors remain unchanged. The split-share structure reform relaxed the trading constraints on NTS shares and positively influenced the liquidity of shares, especially during the post-lockup period. Shareholders in firms with illiquid shares are prevented from achieving the expected capital gains, and hence, these shareholders still prefer cash dividends after the reform. By contrast, for firms whose stocks are more liquid, previously NTS can be sold in the market relatively easily with lower costs. Therefore, controlling shareholders in firms with higher liquidity are more likely to sell their shares after the lockup, reducing their demand for cash dividends. Hence, firms with higher liquidity are expected to have greater reductions in cash payouts after the reform. This expectation is a direct outcome of the liquidity channel, given that the reduction in cash dividends is triggered by the liquidity shock.

Considering this reasoning, we hypothesize as follows:

H3: Firms with higher growth rates and stock liquidity experience greater reductions in cash dividend payouts in the post-reform period.

3.5 Sample and Data Description

The source of our data is the China Stock Market and Accounting Research (CSMAR) database. Our sample includes all Chinese A-shares listed on the Shanghai and Shenzhen Stock Exchanges from 2003 to 2011. We restrict the sample period to the post-2000 period because have Chinese listed firms begun to apply a consistent and unified set of accounting standards since 2000, and the controlling shareholder data begin in 2003.

In constructing our test sample, we exclude firms for which we cannot obtain data on the split-share structure reform.[16] We also remove firm years that are delisted, under 'Special Treatment (ST)' and 'Particular Transfer (PT)'.[17]

Because all dividends, including stock dividends, are taxed at 10% in China after 2005 and because listed firms need to withhold the dividend tax, many firms pay cash dividends simply to cover the tax payable induced by stock dividends. To eliminate this tax-induced effect, we exclude dividend observations with a non-zero before-tax cash dividend but with a zero after-tax dividend (following Lee and Xiao (2004); Huang*, et al.* (2011)).[18]

To precisely capture the real effect of the reform, we include only firm-year observations within 3 years before and 3 years after the reform. Given that reform compensation can take the form of a cash dividend, to avoid confounding factors, we discard the dividend observations that occur exactly in the reform year. Finally, a total of 6,156 firm-year observations are included in our test sample. These observations represent 1,275 listed companies on the Shanghai and Shenzhen Stock Exchanges over the sample period.

Figure 3.1 plots the number of sample firms by their reform completion years. The reform year ranges from 2005 to 2009, but we still find that most firms completed the reform in 2005 and 2006. In our sample period, more than 70% of firms completed the reform in 2006, and 18% of firms completed the reform in 2005.

[Insert Figure 3.1 about here]

We retrieve all variables from the CSMAR database. Table 3.1 provides definitions for all of the variables that are either investigated or used as controls in our tests. Our payout variable is the

[16] The 878 firms with missing reform data either had no NTS before the reform or were first listed after the reform (and therefore did not issue NTS).

[17] China has an investor warning system. If a firm has a negative net income for two consecutive years, then the CSRC gives ST to the shares of the company. The daily price change limit for ST firms is 5%. A firm that has consecutive losses for three years is further classified as an ST* firm. If the firm continues to lose money, it faces delisting and the trading of its shares is suspended. PT is a trading service offered for suspended stocks on every Friday. Cash dividend payments are restricted for firms with ST, ST* and PT status.

[18] We removed 795 firm-year observations.

dividend payout ratio, calculated as the total cash dividends divided by the EBIT (earnings before interest and tax). To cope with extreme values, we winsorize the dividend payout ratio, *Payout*, at the top one percent of its distribution. Some of the key variables that we use in the analysis also pose outlier problems. To address these problems, we winsorize *ROA* and *LagPayout* at the top and bottom one percentiles of their respective distributions and winsorize *SGrowth* and *ROAVOL* at the top one percentile of their respective distributions.

[Insert Table 3.1 about here]

Table 3.2 tabulates the summary statistics for the dividend payout variable and for other key variables used in subsequent analysis. Panel A reports the summary statistics for the entire sample. Cash dividend payouts account for 16.1% of the sample firms' earnings on average, but the maximum payout ratio is as high as 93.4%. This result suggests that on average, Chinese listed firms distribute a lower proportion of earnings as dividends, compared with 27% in the US (Gill, Biger and Tibrewala (2010)) and 47% in the UK (Michaely and Roberts (2012)), with some firms paying extremely high dividends. Furthermore, we divide the full sample into two subsamples according to the nature of their ultimate controlling shareholders. The State subsample consists of firms whose ultimate controlling shareholder is an SOE or a government agency. The Private subsample consists of firms that are ultimately controlled by private entities. Panel B of Table 3.2 reports summary statistics for the State subsample, and Panel C provides summary statistics for the Private subsample. We find that state-controlled firms pay higher average cash dividends than privately controlled firms. This finding is consistent with the evidence in previous studies (see Gao (2009); Hu and Huang (2005); Ma*, et al.* (2005); Song and Li (2007); Wu and Zhai (2013); Yu*, et al.* (2010)). State-controlled firms are also larger than privately controlled firms.

[Insert Table 3.2 about here]

3.6 Empirical Results

3.6.1 Univariate analysis

Figure 3.2 plots the cash dividend payout ratios for the sample firms by financial year. We observe that the reduction in cash payouts is concentrated in the years 2005, 2006 and 2007, when most firms completed their split-share structure reforms. These results provide an intuitive idea of the reform's effect on firms' cash dividend policy.

[Insert Figure 3.2 about here]

To formally investigate the effect of the split-share structure reform on firms' dividend payouts, we compare the sample firms' three-year average cash dividend payout ratio before the reform with the three-year average after the reform. As expected, the average cash dividend payout ratio decreases from 20% before the reform to 13.5% after the reform, a change of 32.5%. The reform thus results in reduced levels of cash dividends, supporting our first hypothesis. We also compare the change in dividend payouts between the State and Private subsamples. We observe greater post-reform reductions in cash payouts in firms owned by the state than in privately owned firms. This finding is also consistent with our expectation.

[Insert Table 3.3 about here]

3.6.2 Multivariate analysis

3.6.2.1 The average effect of share reform on the dividend payout ratio and cross-sectional variation in the effects

We now present the multivariate analysis. In designing our research method, we believe that the reform represents an exogenous shock to firms' governance systems, given that the reform was mandatory and dominated by the CSRC. The reform affected only the exchangeability of previously NTS, with no effects on operating, financing, and investment opportunities that are unrelated to governance.

The CSRC also restricted the number of firms starting the reform at any given time; thus, the reform stages for different firms were staggered. Because our sample firms completed the reform at different calendar times, we are able to apply a difference-in-differences approach to distinguish the effect of the reform from time-specific changes. In a particular financial year, the sample firms that completed the conversion constitute our treatment group, and the other sample firms serve as the control group. Because both groups experienced the same time-specific changes, the differences in their cash dividends provide an estimate of the effect of the split-share reform on dividend payouts.

We estimate the following multivariate Tobit regression model to assess the effect of the reform on dividend policy along with other determinants.

$$Payout_{i,t} = \alpha + \beta_1 Reform_{i,t} + \beta_2 SGrowth_{i,t} + \beta_3 Illiquid_{i,t} + \beta_4 State_{i,t} + \gamma X_{i,t} + \varepsilon_{i,t}$$
$$s.t. Payout_{lower\ bound} = 0 \quad (3.1)$$

The dependent variable is the dividend payout ratio, *Payout*, calculated as the total cash dividends divided by the EBIT. To capture the actual effect of the reform, we construct an indicator variable *Reform*, which is equal to one if firm *i* has finished the reform by the end of year *t* and zero

otherwise. *SGrowth* is the annual sales growth rate averaged over the pre-reform years. *Illiquidity* is the Amihud illiquidity ratio, which is defined as the average ratio of the daily absolute return to the (dollar) trading volume on that day. This ratio is also averaged over the pre-reform years. *State* is an indicator variable equal to one if the firm's ultimate controlling shareholder is a state-owned-enterprise or a government agency and zero otherwise.

$X_{i,t}$ is the set of control variables that determine corporate dividend payouts. Based on the existing literature, $X_{i,t}$ includes the following variables. *ROAVOL* is the standard deviation of *ROA* over the most recent four years, including the current financial year; it is used as a proxy for cash flow uncertainty.[19] *RE2TE* is the proxy for the earned-to-contributed capital mix and is measured as the ratio of retained earnings to total equity.[20] *LagPayout* is the cash dividend payout ratio in the prior year.[21] Other control variables include firm size (measured by the logarithm of total assets), operating profitability (measured by return on assets), cash holding (measured by cash and marketable securities plus short-term investments scaled by total assets) and leverage (measured by the total liabilities scaled by total assets).[22]

Table 3.4 tabulates the results from estimating Equation (3.1). Column 1 shows the result of the baseline model. The coefficient on *Reform* is -0.058, which is highly significant at the 1% level. This finding confirms that the reform leads to a reduction in firms' cash dividend payout ratios and provides strong support for our first hypothesis. The coefficient on *State* is significantly positive. This finding is consistent with the univariate result that state-owned firms pay a higher level of cash dividends than privately owned firms do. Surprisingly, neither *SGrowth* nor *Illiquidity* has significant coefficients. This result implies that firms generally do not place much emphasis on growth opportunities and stock liquidity when determining their payout ratios. Regarding the control variables, all coefficients are associated with the expected signs, which are aligned with those documented in the existing literature. For example, both size and profitability have a positive effect on dividend payout ratios, confirming the result obtained by Fama and French (2001).

In column 2, we add a variable capturing the interaction between *Reform* and *State*; the estimated coefficient on this interaction term captures the differential payout ratio response of a state-owned firm to the reform. The coefficient on *Reform*State* is negative and significant; thus, compared with privately owned firms, state-controlled firms appear to have experienced a greater

[19] Chay and Suh (2009) suggest that cash flow uncertainty has a negative effect on the amount of dividends and on the probability of paying dividends.
[20] DeAngelo, DeAngelo and Stulz (2006) show that firms' propensity to pay dividends is higher when the retained earnings constitute a larger portion of the total equity.
[21] Fama and French (2001) find inertia in dividend decisions.
[22] Fama and French (2001) provide evidence that larger firms and more profitable firms are more likely to pay dividends.

reduction in their cash dividend payout ratio after the reform. Thus, our second hypothesis is supported.

To test whether the response of the payout ratio to the reform differs across firm characteristics, we interact the *Reform* dummy with the firm characteristics in column 3 (i.e., the sales growth rate (*SGrowth*) and the illiquidity ratio (*Illiquidity*)). Several patterns are observed. First, *Reform*SGrowth* is associated with a significantly negative coefficient; hence, firms with higher growth rates tend to experience greater reductions in cash payouts after the reform. Second, *Reform*Illiquidity* exhibits a significantly positive coefficient, implying that the reform results in a larger reduction in cash dividends for firms with higher stock liquidity. Taken together, these results lend strong support to our third hypothesis predicting greater post-reform reductions in cash dividends for firms with higher growth rates and liquidity. Third, although the interaction term of *Reform* and *SGrowth* has a significantly negative coefficient, *SGrowth* is positive and significant per se. This pattern reveals that before the reform, the growth rates of firms have a positive effect on cash dividends, but this effect becomes negative after the reform. As indicated by agency theory, cash dividends decrease with the growth opportunities of the firm, but we do not observe such a negative association in the pre-reform period. This finding is not unexpected, given the dual-share structure in Chinese listed firms before the reform. The differences in demand between TS and NTS holders and the unbalanced controlling rights lead to severe agency problems and weak corporate governance; thus, the relationship between dividends and growth opportunity is loose (even positive) in such firms. As the reform improved governance by reconciling demands and mitigating expropriation behavior, the previously distorted relationship between dividends and growth opportunity was corrected. Hence, we observe a negative coefficient of *Reform*SGrowth* and conclude that firms' cash dividends are negatively affected by growth opportunities after the reform. We interpret this result as evidence of governance improvement associated with the reform. Finally, *Illiquidity* per se has a significantly negative coefficient; however, when it interacts with the *Reform* dummy, the coefficient becomes significantly positive. This result indicates that in the post-reform period, high-liquidity firms are associated with lower cash payout ratios, whereas the opposite association is observed before the reform. Following the reform, investors are allowed to freely sell their shares to achieve liquidity and thus tend to view stock liquidity and cash dividends as substitutes; hence, a negative correlation can be observed.[23] We are less likely to observe such a negative relationship in the pre-reform period because the trading constraint on NTS restrained investors from liquidating their stock to create "homemade" dividends. In fact, high-liquidity firms

[23] Banerjee, *et al.* (2007) propose a liquidity hypothesis of dividends in which stock liquidity and cash dividends are viewed as substitutes and, thus, dividends are negatively related to liquidity.

pay higher cash dividends in the pre-reform period. A possible explanation is that trading ability is of more value to shareholders in more liquid firms, and hence, controlling shareholders demand higher cash dividends to compensate for forfeiting this trading ability. The reversal in the liquidity effect represents a liquidity improvement generated by the reform. In sum, the above results suggest that both the governance channel and the liquidity channel influenced the cash dividend policies of firms during the reform.

Column 4 is the full model, which includes the interaction between *Reform* and *State* as well as the interactions between *Reform* and firm characteristics (i.e., *SGrowth* and *Illiquidity*). Our main conclusions remain unchanged. Notably, the coefficients on the lagged payout ratio, *LagPayout*, are consistently positive and significant throughout all four specifications. This result supports the view that firms tend to smooth their dividends (Fama and French (2001)).

The split-share structure reform represents improvements in firms' liquidity and governance. In this section, we observe a significant reduction in firms' cash dividend payouts in the post-reform period, and greater reductions are observed for firms with higher growth rates and stock liquidity. This observation provides evidence that corporate governance and stock liquidity affect corporate dividend policy in a manner consistent with agency theory and the liquidity hypothesis of dividends.

[Insert Table 3.4 about here]

3.6.2.2 State ownership and the effect of share reform

To verify whether the reform has a differential effect on state-controlled firms and privately controlled firms, we partition the full sample into two subsamples based on the nature of firms' ultimate controlling shareholders. The State subsample consists of firms whose ultimate controlling shareholder is an SOE or a government agency. The Private subsample consists of firms that are controlled by private entities. For both subsamples, we estimate both the baseline and full models. The results are reported in Table 3.5.

Column 1 tabulates the Tobit estimation results for the baseline model. The coefficients on *Reform* are significantly negative for both the State and Private subsamples. This finding suggests that listed firms experience a reduction in cash dividends after the reform, regardless of their ultimate controlling shareholders. This result is unsurprising because the reform was a countrywide program requiring participation from all firms. Furthermore, we observe that the coefficient on *Reform* is larger in magnitude for the State subsample than for the Private subsample (0.066 versus 0.037). This finding confirms the result in Table 3.4, indicating that the reform has a greater effect

on the dividend payout ratio in state-controlled firms than in privately controlled firms. Thus, our second hypothesis is supported.

Column 2 reports the estimation results of the full model, which includes the interaction between *Reform* and *SGrowth* / *Illiquidity*. Again, the coefficient on *Reform* is greater in magnitude (and more significant) for the State subsample than for the Private subsample (0.070 and 0.054, respectively). When examining the interaction terms, we find some interesting patterns. In the Private subsample, the interaction between *Reform* and *SGrowth* is significantly negative, whereas *SGrowth* is positive. *Illiquidity* is significantly negative, but the coefficient on *Reform*Illiquidity* is positive and highly significant. This pattern is the same as that observed for the full sample in Table 3.4. This pattern, however, is not observed in the State subsample. In other words, both the governance and liquidity effects that we find in the full sample are driven primarily by the response of privately controlled firms. Privately controlled firms are more likely to correct the previously distorted relationship between cash dividends and growth / liquidity after the reform. This finding is not unexpected, given the different objectives of state-controlled and privately controlled firms. The nature of both corporate governance and corporate objective in state-controlled firms is shaped by the existence of the government objective function of controlling shareholders, including substantial non-price considerations such as a desire to meet certain political and social welfare objectives (e.g., Shleifer (1998)). By contrast, controlling shareholders of privately-owned firms are generally not expected to have political and social welfare objectives but are instead expected to focus on maximizing returns. Therefore, privately owned firms are expected to align their dividend policies more closely with growth opportunities after the reform, such that the coefficient on *Reform*SGrowth* is negative and highly significant for the Private subsample but insignificant for the State subsample. On the other hand, because of the controlling rights consideration, state-controlled firms have limited ability to create "home-made" dividends to achieve liquidity by selling their shares, although the reform has unfrozen the trading constraint. Consequently, after the reform, the substitution between cash dividends and stock liquidity remains weak in state-controlled firms. Therefore, the post-reform association between liquidity and dividends in the State subsample is not as apparent as we observe in the Private subsample.

[Insert Table 3.5 about here]

3.6.2.3 Corporate governance and the effect of share reform

In the previous analysis, we use the relationship between cash dividends and growth opportunities to proxy for corporate governance quality, but this relationship is likely to be an outcome of

governance rather than a direct measure.[24] To explicitly investigate whether the effect of the split-share structure reform on cash dividends is related to the pre-reform level of corporate governance, we include a direct indicator of corporate governance in our analysis in this section. *Goodgvn* is a proxy for good corporate governance, which is a dummy variable that equals one if firm *i*'s compensation ratio in the reform is below the sample median. The compensation ratio is defined as the number of additional shares received by TS holders from NTS holders for each tradable share held, multiplied by the closing price on the last trading date before the reform, plus the cash compensation ratio. Our use of the compensation ratio as a proxy for corporate governance is supported by many studies of the reform process, which generally indicate that the compensation ratio decreases with the pre-reform governance level (Jin and Yuan (2008); Zheng*, et al.* (2007); Xin and Xu (2007)).[25]

Table 3.6 reports the Tobit regression results after including the direct proxy for good corporate governance. Column 1 shows the estimation of the baseline model. *Reform* has a significantly negative coefficient. Controlling for the governance level, we find that the reform still results in a significant reduction in firms' dividend payout ratios. The coefficient on *Goodgvn* is negative and highly significant, suggesting that as a firm's corporate governance improves, the dividend payout ratio decreases. This finding is consistent with the predictions of both agency theory and the expropriation hypotheses. Other variables are consistent with our previous results.

In columns 2, 3 and 4, we interact *Goodgvn* with the *Reform* dummy and observe that the interaction terms have significantly positive coefficients throughout all three specifications. Given that *Reform* has a negative coefficient per se, we can infer that firms with weaker pre-reform governance have a more significant reform-induced reduction in cash dividends. This result is expected because as the quality of the pre-reform governance declines, the improvement following reform is greater, and the decrease in cash payouts is therefore larger.

In column 3, we add a variable that captures the interaction between *Reform* and *State*. The coefficient on *Reform*State* is only marginally significant in this specification. This result is not unexpected, given that state-controlled firms are more likely to be weakly governed. Because the governance measure *Goodgvn* largely proxies for the state-control nature, our observation of an insignificant coefficient on *Reform*State* is reasonable.

Column 4 reports the results for the full model. In addition to *Reform*Goodgvn*, the full model includes the interaction between *Reform* and *State* / *SGrowth* / *Illiquidity*. All the previous findings

[24] The reform dummy itself is an indicator of corporate governance. We thank Professor Tom Smith for pointing this out.
[25] See the detailed discussion in Section 3.3.4.

hold in the full model. Notably, *Reform*SGrowth* now becomes marginally significant. As discussed earlier, the association between growth opportunities and cash dividends is a potential outcome of good governance. Naturally, directly controlling for the level of corporate governance will reduce the salience of this association. Therefore, growth opportunities appear less important in determining the cash dividend ratio in this specification. The inclusion of the governance measure, however, does not interfere with the liquidity effect.

[Insert Table 3.6 about here]

3.6.2.4 Governance effect vs. liquidity effect

By showing that the relationship between liquidity and dividends is stronger for firms with stronger shareholder power, Igan*, et al.* (2010) argue that good governance (e.g., shareholder protection) is a condition for stock liquidity to influence dividend policy. The liquidity needs of shareholders should be relevant to dividend decisions only if management accounts for their needs. Therefore, if governance is an extreme concern, then stock liquidity will not have a large effect on cash dividends. To address our conjecture, we partition our sample into two subsamples based on the pre-reform quality of corporate governance. We still use firms' compensation ratio in the reform as a proxy for the pre-reform governance level. The Good Govnc subsample consists of firms whose compensation ratio is below the sample median (i.e., *Goodgvn* equals one). The Bad Govnc subsample includes firms with a compensation ratio above the sample median (i.e., *Goodgvn* is equal to zero). For both subsamples, we estimate both the baseline and full models. The results are reported in Table 3.7.

Column 1 tabulates the Tobit estimation results for the baseline model. For both the Good and Bad governance subsamples, the coefficients for *Reform* are significantly negative. Even for firms with good corporate governance, the reform still affects their dividend policy. However, the influence is more significant in the Bad Govnc subsample (manifested by the larger coefficient in magnitude). This finding confirms the results in Table 3.6: the reform has a greater effect on the dividend payout ratio in firms with weaker pre-reform governance.

In column 2, we interact the *Reform* dummy with the illiquidity ratio (*Illiquidity*). For both subsamples, we observe that although *Illiquidity* has a negative coefficient per se (i.e., a positive relationship between liquidity and cash dividends before the reform), *Reform*Illiquidity* is associated with a positive coefficient (i.e., a negative relationship after the reform). More precisely, the relationship between stock liquidity and cash dividends was reversed by the share reform, and the negative relationship observed after the reform is more consistent with the liquidity substitution

hypothesis of dividends (Banerjee*, et al.* (2007)). Comparing the two subsamples, we find that the reversal of the relationship is less pronounced in the Bad Govnc subsample than in the Good Govnc subsample (given the marginal significance of *Illiquidity* and *Reform*Illiquidity* in the Bad Govnc sample). This finding implies that the liquidity needs of shareholders are less respected in weakly governed firms. The result confirms our conjecture that if corporate governance is the dominant concern of management when making dividend payment decisions (for example, in weakly governed firms), then shareholders' liquidity needs are less likely to be considered by management, and the reform-induced liquidity shock thus has a smaller impact on cash dividends in such firms.

The estimation of the full model is reported in column 3. The inclusion of the other two interactions (i.e., *Reform*State* and *Reform*SGrowth*) does not alter our main conclusion. The reversal of the liquidity-dividend relationship is less significant in the Bad Govnc subsample than in the Good Govnc subsample, and this finding is consistent with our above conjecture. Notably, *Reform*State* has a significantly negative coefficient in the Good Govnc subsample, whereas the coefficient is insignificant in the Bad Govnc subsample. This finding suggests that the difference between state-owned and privately owned firms (in terms of the dividend-policy response to the reform) is driven primarily by well-governed state-owned firms. We also observe that the coefficient on *Reform*SGrowth* is significantly negative only in the Good Govnc subsample. Hence, in the post-reform period, growth opportunities have a strong effect on cash dividends only in well-governed firms. For weakly governed firms, this effect is not observed. The findings on the effect of state ownership and growth opportunities indicate that in firms with weak governance, management regards governance as the major concern when making dividend decisions; neither the ownership nature nor growth opportunities have crucial effects on dividend policy.

[Insert Table 3.7 about here]

3.6.2.5 The effect of share reform on the propensity to pay cash dividends

In the previous sections, we focus on how a governance and liquidity shock (the split-share reform) affects firms' cash dividend payout ratios. In this section, we investigate whether firms' propensity to pay a cash dividend also responds to the reform. We estimate a Logistic regression model as follows:

$$CDPayer_{i,t} = \alpha + \beta_1 Reform_{i,t} + \beta_2 SGrowth_{i,t} + \beta_3 Illiquid_{i,t} + \beta_4 State_{i,t} + \gamma X_{i,t} + \varepsilon_{i,t} \quad (3.2)$$

In constructing the dependent variable (i.e., *CDPayer*) for this Logit model, we assign a value of one to firms that pay a cash dividend and a value of zero to firms that do not pay a cash dividend during a given financial year. The set of control variables $X_{i,t}$ is basically the same as in Equation

(3.1), except that we replace the lagged payout ratio (*LagPayout*) with the lagged dividend status (*Lag1CDPayer*) in Equation (3.2). *Lag1CDPayer* is an indicator variable that equals one if firm *i* paid cash dividends in the prior year and zero otherwise.

The estimation results are tabulated in Table 3.8. Column 1 is the baseline model. The *Reform* dummy is negative and significant. Therefore, on average, firms are less likely to pay a cash dividend after completing the split-share structure reform. Cross-sectionally, state-controlled firms are more likely to pay cash dividends, whereas better governed firms have a lower propensity to pay cash dividends. In column 2, we compare the effect of the reform on the propensity to pay cash dividends between state-controlled and privately controlled firms. Although state-controlled firms are more likely to pay before the reform than privately controlled firms are (i.e., the coefficient on *State* is significantly positive), this difference seems to disappear after the reform because *Reform*State* has an insignificant coefficient. From another perspective, if we interpret the results for *Reform*State* together with *Reform*, we find that with respect to the propensity to pay cash dividends, the effect of the reform does not differ between state-controlled and privately controlled firms.

To test whether the corporate governance level influences the effect of the share reform on the decision to pay, we interact *Reform* with *Goodgvn* in column 3. The coefficient on the interaction term is significantly positive. Given that *Reform* has a negative coefficient, the positive coefficient on the interaction term suggests that weakly governed firms experience a greater decline in the propensity to pay cash dividends after the reform. Moreover, we also add a variable capturing the interaction between *Reform* and *Illiquidity*. However, the coefficient on the *Reform*Illiquidity* is insignificant; thus, the effects of the reform are indistinguishable between high-liquidity and low-liquidity firms.

In column 4, we include the interaction between *Reform* and *SGrowth*. To avoid the potential correlation between *SGrowth* and *Goodgvn*, we omit *Reform*Goodgvn* from the model.[26] The coefficient on *Reform*SGrowth* is negative and highly significant, showing that the negative effect of the reform (*Reform* has a negative coefficient) on the propensity to pay cash dividends is stronger in high-growth firms than in low-growth firms. Finally, the estimation of the full model is reported in column 5. The inclusion of all interaction terms does not alter our conclusions.[27] In addition,

[26] Recall that both *SGrowth* and *Goodgvn* are proxies for corporate governance and may thus be correlated.

[27] The effects of control variables on the probability of paying cash dividends are similar to their effects on dividend payout ratios. This result implies that firms consider the same or at least similar factors when making decisions on whether to pay and how much to pay.

throughout all specifications, the coefficients on the lagged dividend status, *Lag1CDPayer*, are consistently positive, which suggests that previous paying status is truly relevant.

[Insert Table 3.8 about here]

3.6.2.6 The effect of share reform on dividend-continuing, dividend-initiating and dividend-omitting firms

To determine whether the split-share reform has a differentiating effect on different dividend-paying groups, we partition our sample into three subsamples according to their dividend status last year and this year. Dividend-continuing firms are classified as firms that pay a cash dividend in year *t-1* and continue to pay dividend in year *t*. Dividend-initiating firms are firms that do not pay a cash dividend in year *t-1* but pay a dividend in year *t*. For comparison, we choose one more group of firms, including those that continue not to pay dividends. Dividend-omitting firms are firms that pay a cash dividend in year *t-1* but do not pay a dividend in year *t*. Dividend-continuing firms can be compared with dividend-omitting firms.

Table 3.9 tabulates the results from the estimation of the Tobit and Logistic regressions. Panel A reports the Tobit regression results regarding the effect of the reform on the dividend payout ratio of continuing payers. The dependent variable is the cash dividend payout ratio, *Payout*. We find that the coefficients on *Reform* are negative and highly significant throughout all specifications. This finding suggests that during the post-reform period, payout levels decreases although these firms choose to maintain their cash dividends. However, we observe no significant cross-sectional difference in the effects of the reform.

Panel B examines whether the split-share structure reform has an effect on firms' decision to initiate a cash dividend by estimating a multivariate Logistic regression. The dependent variable is *Initiate*, which is an indicator variable that equals one if firm *i* does not pay a cash dividend in year *t-1* but pays a dividend in year *t* and that equals zero if firm *i* does not pay dividends in years *t* and *t-1*. From the estimation results, we observe that the split-share structure reform leads to a reduction in firms' likelihood of initiating cash dividends. Furthermore, the reduction is primarily concentrated in firms with high growth rates. For such firms, the probability of initiating dividends decreases dramatically after the reform.

Panel C reports the Logistic regression results regarding the effect of the reform on the propensity to omit a cash dividend. The dependent variable is *Omit*, which is an indicator variable that equals one if firm *i* pays a cash dividend in year *t-1* but does not pay a dividend in year *t* and that equals zero if firm *i* pays dividends in both years *t* and *t-1*. On average, firms are more likely to

omit a cash dividend after the split-share structure reform. However, we observe no explicit cross-sectional variation in the effects of the reform in terms of the propensity to omit cash dividends.

In sum, after the split-share structure reform, firms have generally become less likely to initiate cash dividends and more likely to omit cash dividends. Firms that choose to continue paying cash dividends tend to decrease the level of dividend payouts. These results are consistent with our main results in the previous sections.

[Insert Table 3.9 about here]

3.7 Robustness check

3.7.1 The effect of share reform in different time horizons surrounding the reform

Recall that we restrict our sample to firm-year observations within 3 years before and 3 years after the reform. To verify whether the effect of the reform on firms' dividend policies is subject to the selected time horizon, we re-estimate the Tobit model in two different time horizons. One horizon includes firm-year observations within only one year before and one year after the reform, and the other horizon extends to two years before and after the reform. By investigating the effect of the reform in different time horizons, we can also gain insight into the question of when the governance and liquidity channels take into effect.

In Table 3.10, Panel A shows the estimation of the Tobit model for the time horizon that ranges from one year before the reform to one year after the reform, and Panel B contains the estimation for the two-year horizon. Our main conclusion remains: the reform leads to a significant decrease in cash dividend payouts, regardless of the time horizon that we use. Therefore, the negative effect of the reform on cash dividends is robust to different time horizons. Some interesting patterns are also noted. In the one-year horizon surrounding the reform, neither the governance channel nor the liquidity channel is influential, given that the coefficients on both *Reform*SGrowth* and *Reform*Illiquidity* are not significant.[28]

By contrast, in Panel B (i.e., the two-year horizon), the coefficients on *Reform*Illiquidity* become significant and have the expected positive sign. This finding implies that the liquidity channel comes into effect two years after the reform. This result is not unexpected because during the first year after the reform, the proportion of previously NTS that could be sold was strictly

[28] The coefficient on *Reform*Goodgvn* is significantly positive, implying that weakly governed firms decrease their cash dividends more after the reform. However, this finding may be observed because our governance measure is closely related to the compensation ratio. Weakly governed firms pay higher compensation to facilitate the reform process; as a consequence, they are more reluctant to pay high cash dividends in the post-reform period (Huang, Li and Ye (2012)). Hence, we should not place too much emphasis on this result.

restricted; only in the second year after the reform was completed did a certain proportion of previously NTS become tradable. However, the governance channel remains ineffective in the two-year horizon (the coefficient on *Reform*SGrowth* remains insignificant). Our interpretation is that corporate governance improvements, especially improvement in the alignment between growth opportunities and cash dividends, may require a longer period to emerge.

[Insert Table 3.10 about here]

3.8 Conclusion

The 2005 split-share structure reform in China mandates the conversion of non-tradable shares into tradable shares. The mandatory and exogenous nature of the reform makes it a quasi-natural experiment and provides an ideal setting for empirical analysis. The split-share structure reform represents an exogenous shock to firms' governance that facilitated better alignment of the interests of controlling shareholders with those of outside investors. The reform also removed a substantial trading constraint and created a closer association between stock liquidity and controlling shareholders' interests. In this chapter, we study the effect of reform-induced governance and liquidity improvements on the dividend policies of listed firms, with a focus on cash dividends.

We predict and find that the average cash dividend payout decreases significantly after the reform. Cross-sectionally, the reduction in payouts is more significant for firms with higher growth rates and firms with higher liquidity. Our findings are consistent with the view that the reform is associated with improvements in firms' liquidity and governance, and these improvements have been shown to significantly affect corporate dividend policy. In addition, because of the different characteristics and incentives of the ultimate controlling shareholders of state-controlled and privately controlled firms, a greater decline in cash dividends is observed for firms controlled by state shareholders. We further examine how firms' decision to pay cash dividends is affected by the reform and find that firms are less likely to pay cash dividends in the post-reform period. The probability of initiating a cash dividend also decreases significantly after the reform. Instead, firms are more likely to omit a dividend, and when they do choose to maintain their dividends, they appear to pay out a lower proportion of earnings. Our results are robust to different time horizons surrounding the reform. Our findings provide strong evidence that corporate governance arrangements and stock liquidity shifts have considerably influenced corporate dividend policy.

Table 3.1 Variable Definitions

The table provides definitions for all the variables that are either investigated or used as controls in our tests.

Variable	Definitions
Payout	Cash dividends divided by EBIT
CDPayer	Indicator variable that equals one if firm *i* pays a cash dividend in year *t* and zero otherwise
Reform	Indicator variable that equals one if firm *i* has completed the split-share structure reform by the end of year *t* and zero otherwise
SGrowth	Annual sales growth rate, averaged over the pre-reform years
Illiquidity	Average ratio of the daily absolute return to the (dollar) trading volume on that day, averaged over the pre-reform years
LogTA	Logarithm of total assets
ROA	Ratio of EBIT to total assets
Cash	Cash and marketable securities plus short-term investments scaled by total assets
Leverage	Ratio of total liabilities to total assets
ROAVOL	Standard deviation of ROA over the most recent four years including the current financial year
RE2TE	Ratio of retained earnings to total equity
LagPayout	Cash dividend payout ratio in the prior year
Lag1CDPayer	Indicator variable that equals to one if firm *i* paid cash dividends in the prior year and zero otherwise
State	Indicator variable that equals to one if firm *i*'s ultimate controlling shareholder is a state-owned-enterprise or a government agency and zero otherwise
Private	Indicator variable that equals to one if firm *i*'s ultimate controlling shareholder is a private entity and zero otherwise
Goodgvn	Indicator variable that equals to one if firm *i*'s compensation ratio is below the sample median and zero otherwise. The compensation ratio is defined as the number of additional shares received by TS holders from NTS holders for each tradable share held, multiplied by the closing price on the last trading date before the reform, plus the cash compensation ratio.
Initiate	Indicator variable that equals one if firm *i* does not pay a cash dividend in year *t-1*, but pays a dividend in year *t* and equals zero if firm *i* does not pay dividends in years *t* and *t-1*.
Omit	Indicator variable that equals one if firm *i* pays a cash dividend in year *t-1*, but does not pay a dividend in year *t* and equals zero if firm *i* pays dividends in both year *t* and *t-1*.

Table 3.2 Summary Statistics

The table presents summary statistics of dividend payout ratio and other key variables. All the variables are defined as in Table 1. Our full sample includes 6,156 firm-year observations during the period of 2003-2011, representing 1,275 Chinese listed firms that had completed the split-share structure reform by December 31, 2011. We restrict the sample to firm-year observations within 3 years before and 3 years after the reform and the observations in the reform year are excluded. Panel A reports the summary statistics for the full sample. Panel B reports the summary statistics for the State subsample. The State subsample consists of those firms whose ultimate controlling shareholder is an SOE or a government agency. Panel C reports the summary statistics for the Private subsample. The Private subsample consists of the firms that are controlled by private entities.

Variable	N	Mean	SD	Min	Max
Panel A: Full sample					
Payout	6,156	0.161	0.201	0.000	0.934
Reform	6,156	0.527	0.499	0.000	1.000
SGrowth	5,739	0.289	0.396	-1.000	4.406
Illiquidity	5,936	0.006	0.010	0.000	0.274
LogTA	6,155	21.529	1.072	16.694	27.488
ROA	6,154	0.066	0.046	0.001	0.258
Cash	6,155	0.167	0.119	0.000	0.999
Leverage	6,155	0.487	0.179	0.007	1.000
ROAVOL	6,156	0.031	0.041	0.000	0.298
RE2TE	6,154	0.088	0.365	-2.735	0.721
LagPayout	5,994	0.168	0.208	0.000	0.930
Goodgvn	6,152	0.476	0.499	0.000	1.000
CDPayer	6,156	0.577	0.494	0.000	1.000
Lag1CDPayer	6,009	0.569	0.495	0.000	1.000
Initiate	2,589	0.253	0.435	0.000	1.000
Omit	3,420	0.193	0.394	0.000	1.000
State	6,146	0.710	0.454	0.000	1.000
Private	6,146	0.290	0.454	0.000	1.000
Panel B: State sample					
Payout	4,363	0.171	0.201	0.000	0.934
Reform	4,363	0.515	0.500	0.000	1.000
SGrowth	4,214	0.282	0.368	-0.597	4.406
Illiquidity	4,274	0.006	0.011	0.000	0.274
LogTA	4,362	21.669	1.092	16.694	27.488
ROA	4,361	0.064	0.045	0.001	0.258
Cash	4,362	0.163	0.113	0.001	0.863
Leverage	4,362	0.490	0.178	0.008	1.000
ROAVOL	4,363	0.028	0.034	0.000	0.298
RE2TE	4,361	0.105	0.302	-2.735	0.721
LagPayout	4,273	0.181	0.210	0.000	0.930
Goodgvn	4,363	0.435	0.496	0.000	1.000

CDPayer	4,363	0.608	0.488	0.000	1.000
Lag1CDPayer	4,285	0.600	0.490	0.000	1.000
Initiate	1,715	0.275	0.447	0.000	1.000
Omit	2,570	0.180	0.384	0.000	1.000
Panel C: Private sample					
Payout	1,783	0.134	0.197	0.000	0.934
Reform	1,783	0.556	0.497	0.000	1.000
SGrowth	1,520	0.307	0.464	-1.000	4.406
Illiquidity	1,654	0.006	0.007	0.000	0.108
LogTA	1,783	21.190	0.939	18.008	24.807
ROA	1,783	0.069	0.048	0.001	0.258
Cash	1,783	0.176	0.131	0.000	0.999
Leverage	1,783	0.481	0.181	0.007	0.983
ROAVOL	1,783	0.037	0.054	0.000	0.298
RE2TE	1,783	0.049	0.480	-2.735	0.691
LagPayout	1,713	0.137	0.200	0.000	0.930
Goodgvn	1,779	0.578	0.494	0.000	1.000
CDPayer	1,783	0.502	0.500	0.000	1.000
Lag1CDPayer	1,715	0.492	0.500	0.000	1.000
Initiate	871	0.210	0.408	0.000	1.000
Omit	844	0.231	0.422	0.000	1.000

Table 3.3 Changes in Dividend Payout Ratio before and after the Reform

The table compares firms' three-year average cash dividend payout ratio before and after the split-share structure reform. Our full sample includes 6,156 firm-year observations during the period of 2003-2011, representing 1,275 Chinese listed firms that had completed the split-share structure reform by December 31, 2011. We restrict the sample to firm-year observations within 3 years before and 3 years after the reform and the observations in the reform year are excluded. *Payout* is defined as the ratio of cash dividends to EBIT. Panel A reports the change in average payout ratio after the reform and its t-statistic for the full sample. Panel B reports the change for the State subsample. The State subsample consists of those firms whose ultimate controlling shareholder is an SOE or a government agency. Panel C reports the change for the Private subsample. The Private subsample consists of the firms that are controlled by private entities. T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Variable	3-year average before the reform	3-year average after the reform	Change (After - Before)
Panel A: Full sample			
Payout	0.200*** (46.16)	0.135*** (44.31)	-0.065*** (-12.25)
No of Observations	2768	3039	2768
No of firms	1121	1121	1121
Panel B: State sample			
Payout	0.214*** (41.78)	0.140*** (39.83)	-0.074*** (-11.86)
No of Observations	2018	2165	2018
No of firms	793	793	793
Panel C: Private sample			
Payout	0.164*** (20.32)	0.124*** (20.31)	-0.040*** (-3.98)
No of Observations	747	869	747
No of firms	326	326	326

Table 3.4 Average Effect of Share Reform on Payout Ratio and Cross-sectional Variation in the Effects

The table reports Tobit regression results on the average effect of the split-share structure reform on firms' cash dividend payout ratio as well as the cross-sectional variation in the effects. Our full sample includes 6,156 firm-year observations during the period of 2003-2011, representing 1,275 Chinese listed firms that had completed the split-share structure reform by December 31, 2011. We restrict the sample to firm-year observations within 3 years before and 3 years after the reform and the observations in the reform year are excluded. The dependent variable is *Payout*, defined as cash dividends divided by EBIT. *Reform* is a dummy variable that equals one if firm *i* has completed the split-share structure reform by the end of year *t*. *State* is an indicator variable that equals to one if the firm's ultimate controlling shareholder is a state-owned-enterprise or a government agency. *SGrowth* is the annual sales growth rate, averaged over the pre-reform years and *Illiquidity* is the average ratio of the daily absolute return to the (dollar) trading volume on that day, averaged over the pre-reform years. *LagPayout* is the cash dividend payout ratio in the prior year. See Table 1 for definitions of all other variables. T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent Variable	Dependent Variable: Cash Dividend Payout Ratio			
	(1)	(2)	(3)	(4)
Reform	-0.058***	-0.028*	-0.065***	-0.035**
	(-7.41)	(-1.90)	(-5.30)	(-1.96)
State	0.038***	0.058***	0.038***	0.058***
	(4.48)	(4.83)	(4.52)	(4.80)
*Reform*State*		-0.039**		-0.038**
		(-2.38)		(-2.31)
SGrowth	0.008	0.008	0.033**	0.034**
	(0.77)	(0.79)	(2.00)	(2.06)
*Reform*SGrowth*			-0.042**	-0.043**
			(-1.98)	(-2.05)
Illiquidity	-0.863	-0.873	-3.446***	-3.346***
	(-1.16)	(-1.17)	(-2.77)	(-2.69)
*Reform*Illiquidity*			3.707***	3.570***
			(2.72)	(2.61)
ROAVOL	-1.041***	-1.045***	-1.043***	-1.048***
	(-6.47)	(-6.50)	(-6.49)	(-6.52)
LogTA	0.036***	0.036***	0.035***	0.035***
	(8.46)	(8.45)	(8.23)	(8.25)
ROA	0.385***	0.382***	0.353***	0.351***
	(3.94)	(3.91)	(3.60)	(3.58)
RE2TE	0.372***	0.371***	0.376***	0.376***
	(11.67)	(11.68)	(11.79)	(11.79)
Cash	0.245***	0.247***	0.244***	0.246***
	(7.55)	(7.62)	(7.53)	(7.59)
Leverage	-0.265***	-0.262***	-0.267***	-0.264***
	(-10.61)	(-10.49)	(-10.67)	(-10.57)
LagPayout	0.577***	0.577***	0.576***	0.576***
	(32.08)	(32.10)	(32.07)	(32.09)
Intercept	-0.773***	-0.789***	-0.740***	-0.758***
	(-8.61)	(-8.76)	(-8.19)	(-8.36)
No of Observations	5,618	5,618	5,618	5,618
Likelihood Ratio	2,576	2,582	2,589	2,594

Table 3.5 Effect of Share Reform across State and Private Subsamples

The table reports Tobit regression results on the effect of the split-share structure reform on dividend payout ratio for two subsamples. Our full sample includes 6,156 firm-year observations during the period of 2003-2011, representing 1,275 Chinese listed firms that had completed the split-share structure reform by December 31, 2011. We restrict the sample to firm-year observations within 3 years before and 3 years after the reform and the observations in the reform year are excluded. We partition the full sample into two subsamples by the nature of firms' ultimate controlling shareholders. The State subsample consists of those firms whose ultimate controlling shareholder is an SOE or a government agency. The Private subsample consists of the firms that are controlled by private entities. For both subsamples, we estimate both the baseline and the full models. The dependent variable is *Payout*, defined as cash dividends divided by EBIT. *Reform* is a dummy variable that equals one if firm *i* has completed the split-share structure reform by the end of year *t*. *SGrowth* is the annual sales growth rate, averaged over the pre-reform years and *Illiquidity* is the average ratio of the daily absolute return to the (dollar) trading volume on that day, averaged over the pre-reform years. *LagPayout* is the cash dividend payout ratio in the prior year. See Table 1 for definitions of all other variables. T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent Variable	Dependent Variable: Cash Dividend Payout Ratio			
	(1)		(2)	
	State	Private	State	Private
Reform	-0.066***	-0.037**	-0.070***	-0.054*
	(-7.55)	(-2.18)	(-5.08)	(-1.89)
SGrowth	0.008	0.018	0.028	0.061**
	(0.63)	(0.90)	(1.39)	(2.09)
*Reform*SGrowth*			-0.033	-0.077**
			(-1.30)	(-1.98)
Illiquidity	-0.174	-3.907*	-2.148	-8.518***
	(-0.25)	(-1.89)	(-1.56)	(-2.64)
*Reform*Illiquidity*			2.598*	7.416**
			(1.74)	(2.00)
ROAVOL	-1.007***	-1.130***	-1.000***	-1.203***
	(-5.52)	(-3.29)	(-5.49)	(-3.48)
LogTA	0.033***	0.057***	0.032***	0.055***
	(7.24)	(4.95)	(6.96)	(4.82)
ROA	0.292***	0.643***	0.259**	0.636***
	(2.59)	(3.25)	(2.28)	(3.22)
RE2TE	0.372***	0.383***	0.375***	0.387***
	(10.31)	(5.60)	(10.37)	(5.68)
Cash	0.236***	0.259***	0.235***	0.262***
	(6.26)	(4.01)	(6.23)	(4.06)
Leverage	-0.269***	-0.269***	-0.272***	-0.270***
	(-9.61)	(-4.78)	(-9.66)	(-4.78)
LagPayout	0.548***	0.656***	0.548***	0.652***
	(27.03)	(16.94)	(27.02)	(16.88)
Intercept	-0.645***	-1.241***	-0.615***	-1.199***
	(-6.72)	(-5.21)	(-6.26)	(-4.96)
No of Observations	4,137	1,481	4,137	1,481
Likelihood Ratio	1,787	748.5	1,792	756.5

Table 3.6 Corporate Governance and Effect of Share Reform

The table reports Tobit regression results on the effect of the split-share structure reform on dividend payout ratio after including corporate governance measure. Our full sample includes 6,156 firm-year observations during the period of 2003-2011, representing 1,275 Chinese listed firms that had completed the split-share structure reform by December 31, 2011. We restrict the sample to firm-year observations within 3 years before and 3 years after the reform and the observations in the reform year are excluded. The dependent variable is *Payout*, defined as cash dividends divided by EBIT. *Reform* is a dummy variable that equals one if firm *i* has completed the split-share structure reform by the end of year *t*. *Goodgvn* is a proxy for good corporate governance, which is an indicator variable that equals to one if firm *i*'s compensation ratio is below the sample median. The compensation ratio is defined as the number of additional shares received by TS holders from NTS holders for each tradable share held, multiplied by the closing price on the last trading date before the reform, plus the cash compensation ratio. *State* is an indicator variable that equals to one if the firm's ultimate controlling shareholder is a state-owned-enterprise or a government agency. *SGrowth* is the annual sales growth rate, averaged over the pre-reform years and *Illiquidity* is the average ratio of the daily absolute return to the (dollar) trading volume on that day, averaged over the pre-reform years. *LagPayout* is the cash dividend payout ratio in the prior year. See Table 1 for definitions of all other variables. T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent Variable	Dependent Variable: Cash Dividend Payout Ratio			
	(1)	(2)	(3)	(4)
Reform	-0.058***	-0.075***	-0.069***	-0.056***
	(-7.46)	(-7.42)	(-3.73)	(-2.80)
Goodgvn	-0.036***	-0.055***	-0.053***	-0.052***
	(-4.88)	(-5.32)	(-5.09)	(-4.98)
*Reform*Goodgvn*		0.038***	0.033**	0.031**
		(2.64)	(2.28)	(2.17)
State	0.031***	0.031***	0.048***	0.048***
	(3.64)	(3.64)	(3.91)	(3.97)
*Reform*State*			-0.032*	-0.033**
			(-1.91)	(-1.97)
SGrowth	0.005	0.005	0.005	0.028*
	(0.52)	(0.49)	(0.45)	(1.69)
*Reform*SGrowth*				-0.038*
				(-1.80)
Illiquidity	-0.894	-0.895	-3.690***	-3.492***
	(-1.20)	(-1.20)	(-2.93)	(-2.78)
*Reform*Illiquidity*			3.896***	3.694***
			(2.83)	(2.69)
ROAVOL	-1.012***	-1.007***	-1.001***	-1.012***
	(-6.31)	(-6.28)	(-6.24)	(-6.31)
LogTA	0.037***	0.037***	0.036***	0.036***
	(8.58)	(8.64)	(8.31)	(8.39)
ROA	0.357***	0.344***	0.315***	0.312***
	(3.65)	(3.52)	(3.21)	(3.18)
RE2TE	0.358***	0.362***	0.364***	0.365***
	(11.28)	(11.38)	(11.45)	(11.47)
Cash	0.235***	0.233***	0.234***	0.234***
	(7.24)	(7.18)	(7.22)	(7.22)
Leverage	-0.263***	-0.264***	-0.260***	-0.263***
	(-10.57)	(-10.59)	(-10.43)	(-10.54)
LagPayout	0.570***	0.569***	0.570***	0.569***

	(31.64)	(31.63)	(31.68)	(31.65)
Intercept	-0.755***	-0.751***	-0.717***	-0.731***
	(-8.42)	(-8.37)	(-7.93)	(-8.06)
No of Observations	5,618	5,618	5,618	5,618
Likelihood Ratio	2,600	2,607	2,619	2,623

Table 3.7 Effect of Stock Liquidity across Governance Subsamples

The table reports Tobit regression results on the effect of stock liquidity on dividend payout ratio for two subsamples. Our full sample includes 6,156 firm-year observations during the period of 2003-2011, representing 1,275 Chinese listed firms that had completed the split-share structure reform by December 31, 2011. We restrict the sample to firm-year observations within 3 years before and 3 years after the reform and the observations in the reform year are excluded. We partition the full sample into two subsamples by the quality of corporate governance. The Good Govnc subsample consists of those firms whose compensation ratio is below the sample median. The compensation ratio is defined as the number of additional shares received by TS holders from NTS holders for each tradable share held, multiplied by the closing price on the last trading date before the reform, plus the cash compensation ratio. The Bad Govnc subsample consists of the firms whose compensation ratio is above the sample median. The dependent variable is *Payout*, defined as cash dividends divided by EBIT. *Reform* is a dummy variable that equals one if firm *i* has completed the split-share structure reform by the end of year *t*. *State* is an indicator variable that equals to one if the firm's ultimate controlling shareholder is a state-owned-enterprise or a government agency. *SGrowth* is the annual sales growth rate, averaged over the pre-reform years and *Illiquidity* is the average ratio of the daily absolute return to the (dollar) trading volume on that day, averaged over the pre-reform years. *LagPayout* is the cash dividend payout ratio in the prior year. See Table 1 for definitions of all other variables. T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent Variable	Dependent Variable: Cash Dividend Payout Ratio					
	(1)		(2)		(3)	
	Good Govnc	Bad Govnc	Good Govnc	Bad Govnc	Good Govnc	Bad Govnc
Reform	-0.050***	-0.064***	-0.080***	-0.080***	-0.017	-0.081***
	(-4.08)	(-6.36)	(-4.59)	(-5.96)	(-0.66)	(-3.16)
State	0.034***	0.028**	0.034***	0.029**	0.066***	0.026
	(2.74)	(2.34)	(2.72)	(2.37)	(3.76)	(1.53)
*Reform*State*					-0.063**	0.004
					(-2.57)	(0.17)
SGrowth	-0.003	0.014	-0.004	0.014	0.037	0.017
	(-0.19)	(0.93)	(-0.26)	(0.91)	(1.46)	(0.76)
*Reform*SGrowth*					-0.064**	-0.006
					(-1.99)	(-0.21)
Illiquidity	-1.622	-0.642	-5.124**	-3.075*	-4.721**	-3.053*
	(-1.33)	(-0.74)	(-2.49)	(-1.84)	(-2.31)	(-1.82)
*Reform*Illiquidity*			5.673**	3.052*	5.146**	3.033*
			(2.38)	(1.73)	(2.17)	(1.71)
ROAVOL	-0.991***	-0.973***	-0.992***	-0.954***	-1.020***	-0.954***
	(-3.91)	(-4.66)	(-3.91)	(-4.57)	(-4.04)	(-4.57)
LogTA	0.047***	0.029***	0.046***	0.027***	0.046***	0.027***
	(6.98)	(5.14)	(6.69)	(4.84)	(6.74)	(4.84)
ROA	0.481***	0.276**	0.446***	0.255**	0.424**	0.254**
	(2.82)	(2.31)	(2.61)	(2.13)	(2.48)	(2.12)
RE2TE	0.505***	0.253***	0.512***	0.252***	0.510***	0.252***
	(9.44)	(6.32)	(9.54)	(6.28)	(9.55)	(6.28)
Cash	0.369***	0.151***	0.366***	0.151***	0.374***	0.151***
	(6.45)	(3.85)	(6.41)	(3.86)	(6.55)	(3.85)
Leverage	-0.263***	-0.270***	-0.260***	-0.267***	-0.261***	-0.268***
	(-6.60)	(-8.40)	(-6.53)	(-8.34)	(-6.54)	(-8.33)
LagPayout	0.632***	0.511***	0.634***	0.511***	0.630***	0.511***
	(21.28)	(22.69)	(21.34)	(22.68)	(21.22)	(22.68)
Intercept	-1.080***	-0.515***	-1.031***	-0.468***	-1.068***	-0.468***
	(-7.59)	(-4.50)	(-7.10)	(-4.02)	(-7.35)	(-3.97)
No of Observations	2,735	2,883	2,735	2,883	2,735	2,883
Likelihood Ratio	1,348	1,091	1,354	1,094	1,364	1,094

Table 3.8 Effect of Share Reform on the Propensity to Pay Cash Dividends

The table reports Logistic regression results on the average effect of the split-share structure reform on firms' propensity to pay a cash dividend. Our full sample includes 6,156 firm-year observations during the period of 2003-2011, representing 1,275 Chinese listed firms that had completed the split-share structure reform by December 31, 2011. We restrict the sample to firm-year observations within 3 years before and 3 years after the reform and the observations in the reform year are excluded. The dependent variable is *CDPayer*, which is an indicator variable that equals one if firm *i* pays a cash dividend in year *t*. *Reform* is a dummy variable that equals one if firm *i* has completed the split-share structure reform by the end of year *t*. *Goodgvn* is proxy for good corporate governance, which is an indicator variable that equals to one if firm *i*'s compensation ratio is below the sample median. The compensation ratio is defined as the number of additional shares received by TS holders from NTS holders for each tradable share held, multiplied by the closing price on the last trading date before the reform, plus the cash compensation ratio. *State* is an indicator variable that equals to one if the firm's ultimate controlling shareholder is a state-owned-enterprise or a government agency. *SGrowth* is the annual sales growth rate, averaged over the pre-reform years and *Illiquidity* is the average ratio of the daily absolute return to the (dollar) trading volume on that day, averaged over the pre-reform years. *Lag1CDPayer* is an indicator variable that equals to one if firm *i* paid cash dividends in the prior year. See Table 1 for definitions of all other variables. T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent Variable	Dependent Variable: The propensity to pay a dividend				
	(1)	(2)	(3)	(4)	(5)
Reform	-0.346***	-0.254*	-0.551***	-0.229*	-0.287
	(-4.56)	(-1.83)	(-4.32)	(-1.93)	(-1.50)
State	0.333***	0.398***	0.331***	0.338***	0.390***
	(4.08)	(3.47)	(4.04)	(4.14)	(3.36)
*Reform*State*		-0.127			-0.108
		(-0.80)			(-0.67)
Goodgvn	-0.378***	-0.378***	-0.523***	-0.368***	-0.498***
	(-5.28)	(-5.27)	(-5.14)	(-5.12)	(-4.85)
*Reform*Goodgvn*			0.284**		0.257*
			(2.00)		(1.79)
SGrowth	0.120	0.120	0.111	0.490***	0.481***
	(1.20)	(1.20)	(1.11)	(3.02)	(2.95)
*Reform*SGrowth*				-0.593***	-0.586***
				(-2.91)	(-2.87)
Illiquidity	-2.904	-2.912	-10.882	-8.210	-8.730
	(-0.55)	(-0.55)	(-0.98)	(-0.75)	(-0.79)
*Reform*Illiquidity*			10.494	7.684	8.461
			(0.85)	(0.64)	(0.69)
ROAVOL	-12.492***	-12.523***	-12.465***	-12.679***	-12.675***
	(-7.64)	(-7.65)	(-7.62)	(-7.75)	(-7.74)
LogTA	0.497***	0.497***	0.493***	0.497***	0.499***
	(10.55)	(10.55)	(10.27)	(10.34)	(10.38)
ROA	15.426***	15.439***	15.171***	15.258***	15.117***
	(13.48)	(13.48)	(13.17)	(13.27)	(13.12)
RE2TE	2.656***	2.653***	2.687***	2.673***	2.699***
	(8.34)	(8.33)	(8.42)	(8.38)	(8.45)
Cash	1.649***	1.660***	1.626***	1.657***	1.649***
	(4.79)	(4.82)	(4.73)	(4.81)	(4.79)
Leverage	-1.413***	-1.401***	-1.402***	-1.458***	-1.447***
	(-5.78)	(-5.73)	(-5.73)	(-5.93)	(-5.88)
Lag1CDPayer	1.731***	1.731***	1.732***	1.735***	1.736***

	(23.91)	(23.91)	(23.90)	(23.93)	(23.92)
Intercept	-11.742***	-11.793***	-11.520***	-11.790***	-11.799***
	(-12.11)	(-12.14)	(-11.50)	(-11.73)	(-11.71)
No of Observations	5,632	5,632	5,632	5,632	5,632
Pseudo R2	35.1%	35.1%	35.1%	35.2%	35.2%

Table 3.9 Effect of Share Reform on Dividend-Continuing, Dividend-Initiating and Dividend-Omitting Firms

The table reports Tobit and Logistic regression results on the effect of the split-share structure reform on dividend-continuing, dividend-initiating and omitting firms. Our full sample includes 6,156 firm-year observations during the period of 2003-2011, representing 1,275 Chinese listed firms that had completed the split-share structure reform by December 31, 2011. We restrict the sample to firm-year observations within 3 years before and 3 years after the reform and the observations in the reform year are excluded. We partition the full sample into three subsamples according to their dividend status last year and this year. Dividend-continuing firms are classified as those firms that pay a cash dividend in year *t-1* and continue to pay dividend in year *t*. Dividend-initiating firms are those firms that do not pay a cash dividend in year *t-1*, but pay a dividend in year *t*. For comparison, we choose one more group of firms, which are those firms that continue to not pay dividends. Dividend-omitting firms are those firms that pay a cash dividend in year *t-1*, but do not pay a dividend in year *t*. Dividend-continuing firms can be the comparison of dividend-omitting firms. Panel A reports Tobit regression results on the effect of the reform on dividend payout ratio of continuing payers. The dependent variable is *Payout*, defined as cash dividends divided by EBIT. Panel B reports Logistic regression results on the effect of the reform on the propensity to initiate a cash dividend. The dependent variable is *Initiate*, which is an indicator variable that equals one if firm *i* does not pay a cash dividend in year *t-1*, but pays a dividend in year *t* and equals zero if firm *i* does not pay dividends in years *t* and *t-1*. Panel C reports Logistic regression results on the effect of the reform on the propensity to omit a cash dividend. The dependent variable is *Omit*, which is an indicator variable that equals one if firm *i* pays a cash dividend in year *t-1*, but does not pay a dividend in year *t* and equals zero if firm *i* pays dividends in both years *t* and *t-1*. *Reform* is a dummy variable that equals one if firm *i* has completed the split-share structure reform by the end of year *t*. *Goodgvn* is proxy for good corporate governance, which is an indicator variable that equals to one if firm *i*'s compensation ratio is below the sample median. The compensation ratio is defined as the number of additional shares received by TS holders from NTS holders for each tradable share held, multiplied by the closing price on the last trading date before the reform, plus the cash compensation ratio. *State* is an indicator variable that equals to one if the firm's ultimate controlling shareholder is a state-owned-enterprise or a government agency. *SGrowth* is the annual sales growth rate, averaged over the pre-reform years and *Illiquidity* is the average ratio of the daily absolute return to the (dollar) trading volume on that day, averaged over the pre-reform years. *LagPayout* is the cash dividend payout ratio in the prior year. *Lag1CDPayer* is an indicator variable that equals to one if firm *i* paid cash dividends in the prior year. See Table 1 for definitions of all other variables. T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Panel A: The effect of the reform on dividend payout ratio of dividend-continuing firms

Independent Variable	Dependent Variable: Cash Dividend Payout Ratio				
	(1)	(2)	(3)	(4)	(5)
Reform	-0.037***	-0.031***	-0.051***	-0.042***	-0.043***
	(-6.14)	(-2.64)	(-4.86)	(-4.42)	(-2.67)
State	-0.001	0.003	-0.001	-0.001	0.003
	(-0.17)	(0.33)	(-0.17)	(-0.16)	(0.32)
*Reform*State*		-0.008			-0.008
		(-0.63)			(-0.62)
Goodgvn	-0.003	-0.003	-0.003	-0.001	-0.001
	(-0.48)	(-0.50)	(-0.50)	(-0.11)	(-0.10)
*Reform*Goodgvn*				-0.004	-0.004
				(-0.35)	(-0.38)
SGrowth	-0.008	-0.008	-0.023	-0.008	-0.023
	(-0.89)	(-0.88)	(-1.54)	(-0.92)	(-1.52)
*Reform*SGrowth*			0.023		0.022
			(1.24)		(1.21)
Illiquidity	-0.923	-0.935	-2.012*	-1.816	-1.996*
	(-1.25)	(-1.27)	(-1.76)	(-1.60)	(-1.74)
*Reform*Illiquidity*			1.613	1.370	1.573
			(1.21)	(1.04)	(1.18)
ROAVOL	0.683***	0.682***	0.688***	0.687***	0.686***
	(4.82)	(4.82)	(4.86)	(4.85)	(4.84)

LogTA	0.002	0.002	0.002	0.002	0.002
	(0.66)	(0.65)	(0.50)	(0.55)	(0.50)
ROA	-0.752***	-0.753***	-0.757***	-0.758***	-0.757***
	(-10.10)	(-10.11)	(-10.13)	(-10.14)	(-10.14)
RE2TE	0.022	0.022	0.025	0.023	0.024
	(0.73)	(0.73)	(0.81)	(0.75)	(0.79)
Cash	0.102***	0.102***	0.101***	0.102***	0.102***
	(4.32)	(4.33)	(4.32)	(4.34)	(4.34)
Leverage	-0.257***	-0.257***	-0.255***	-0.257***	-0.254***
	(-13.04)	(-13.02)	(-12.88)	(-13.03)	(-12.85)
LagPayout	0.495***	0.495***	0.497***	0.496***	0.497***
	(32.00)	(32.01)	(32.02)	(31.98)	(32.00)
Intercept	0.254***	0.251***	0.272***	0.265***	0.268***
	(3.77)	(3.72)	(3.98)	(3.88)	(3.91)
No of Observations	2,635	2,635	2,635	2,635	2,635
Likelihood Ratio	1,662	1,663	1,665	1,664	1,665

Panel B: The effect of the reform on the probability of initiating dividends

Independent Variable	Dependent Variable: The propensity to initiate a dividend				
	(1)	(2)	(3)	(4)	(5)
Reform	-0.337***	-0.163	-0.211	-0.634***	-0.149
	(-2.97)	(-0.77)	(-1.18)	(-3.19)	(-0.52)
State	0.467***	0.594***	0.484***	0.461***	0.618***
	(3.77)	(3.31)	(3.89)	(3.71)	(3.37)
*Reform*State*		-0.239			-0.262
		(-0.98)			(-1.07)
Goodgvn	-0.426***	-0.423***	-0.401***	-0.577***	-0.529***
	(-3.91)	(-3.88)	(-3.66)	(-3.64)	(-3.29)
*Reform*Goodgvn*				0.282	0.247
				(1.30)	(1.13)
SGrowth	0.091	0.090	0.662***	0.077	0.668***
	(0.69)	(0.68)	(3.14)	(0.59)	(3.12)
*Reform*SGrowth*			-0.932***		-0.945***
			(-3.41)		(-3.43)
Illiquidity	-18.632*	-18.897*	-32.916*	-36.628**	-33.624*
	(-1.75)	(-1.76)	(-1.85)	(-2.04)	(-1.87)
*Reform*Illiquidity*			21.837	25.134	22.727
			(1.14)	(1.29)	(1.17)
ROAVOL	-12.379***	-12.429***	-13.089***	-12.320***	-13.091***
	(-5.26)	(-5.28)	(-5.52)	(-5.24)	(-5.52)
LogTA	0.319***	0.316***	0.317***	0.306***	0.315***
	(4.17)	(4.13)	(4.16)	(4.02)	(4.13)
ROA	15.660***	15.684***	15.532***	15.262***	15.334***
	(9.19)	(9.19)	(9.09)	(8.90)	(8.91)
RE2TE	4.208***	4.197***	4.262***	4.238***	4.281***
	(9.30)	(9.29)	(9.39)	(9.37)	(9.42)
Cash	1.647***	1.667***	1.682***	1.627***	1.695***

	(3.27)	(3.31)	(3.34)	(3.25)	(3.37)
Leverage	-0.877**	-0.841**	-0.946***	-0.836**	-0.899**
	(-2.43)	(-2.32)	(-2.60)	(-2.31)	(-2.46)
Intercept	-8.387***	-8.443***	-8.402***	-7.908***	-8.401***
	(-5.29)	(-5.31)	(-5.26)	(-4.98)	(-5.25)
No of Observations	2,373	2,373	2,373	2,373	2,373
Pseudo R2	21.7%	21.8%	22.2%	21.8%	22.3%

Panel C: The effect of the reform on the probability of omitting dividends

Independent Variable	Dependent Variable: The propensity to omit a dividend				
	(1)	(2)	(3)	(4)	(5)
Reform	0.295***	0.282	0.360*	0.555***	0.532*
	(2.75)	(1.48)	(1.77)	(2.76)	(1.82)
State	-0.236**	-0.246	-0.238**	-0.239**	-0.224
	(-2.13)	(-1.60)	(-2.14)	(-2.15)	(-1.44)
*Reform*State*		0.019			-0.029
		(0.09)			(-0.13)
Goodgvn	0.333***	0.333***	0.333***	0.470***	0.469***
	(3.44)	(3.44)	(3.44)	(3.48)	(3.44)
*Reform*Goodgvn*				-0.275	-0.275
				(-1.44)	(-1.42)
SGrowth	-0.266	-0.265	-0.366	-0.263	-0.347
	(-1.59)	(-1.59)	(-1.39)	(-1.57)	(-1.32)
*Reform*SGrowth*			0.168		0.141
			(0.50)		(0.42)
Illiquidity	-37.968***	-37.957***	-28.069	-26.301	-27.104
	(-2.63)	(-2.63)	(-1.46)	(-1.37)	(-1.40)
*Reform*Illiquidity*			-19.926	-22.710	-21.550
			(-0.80)	(-0.91)	(-0.86)
ROAVOL	10.481***	10.487***	10.398***	10.401***	10.370***
	(4.22)	(4.22)	(4.19)	(4.19)	(4.17)
LogTA	-0.676***	-0.676***	-0.676***	-0.678***	-0.679***
	(-9.73)	(-9.73)	(-9.70)	(-9.72)	(-9.73)
ROA	-17.350***	-17.350***	-17.247***	-17.178***	-17.153***
	(-10.21)	(-10.21)	(-10.13)	(-10.10)	(-10.08)
RE2TE	-0.057	-0.058	-0.071	-0.106	-0.102
	(-0.10)	(-0.10)	(-0.13)	(-0.19)	(-0.18)
Cash	-1.563***	-1.565***	-1.565***	-1.539***	-1.536***
	(-3.27)	(-3.27)	(-3.27)	(-3.21)	(-3.20)
Leverage	1.766***	1.765***	1.783***	1.783***	1.793***
	(5.00)	(5.00)	(5.04)	(5.05)	(5.06)
Intercept	13.667***	13.675***	13.633***	13.564***	13.599***
	(9.35)	(9.34)	(9.26)	(9.23)	(9.20)
No of Observations	3,259	3,259	3,259	3,259	3,259
Pseudo R2	11.8%	11.8%	11.8%	11.9%	11.9%

Table 3.10 Effect of Share Reform in Different Time Horizons surrounding the Reform

The table reports Tobit regression results on the effect of the split-share structure reform on firms' dividend payout ratio within different time horizons surrounding the reform. Our full sample includes 6,156 firm-year observations during the period of 2003-2011, representing 1,275 Chinese listed firms that had completed the split-share structure reform by December 31, 2011. In Panel A, we restrict the sample to firm-year observations within 1 year before and 1 year after the reform and the observations in the reform year are excluded. In Panel B, we restrict the sample to firm-year observations within 2 years before and 2 years after the reform and the observations in the reform year are excluded. The dependent variable is *Payout*, defined as cash dividends divided by EBIT. *Reform* is a dummy variable that equals one if firm *i* has completed the split-share structure reform by the end of year *t*. *Goodgvn* is proxy for good corporate governance, which is an indicator variable that equals to one if firm *i*'s compensation ratio is below the sample median. The compensation ratio is defined as the number of additional shares received by TS holders from NTS holders for each tradable share held, multiplied by the closing price on the last trading date before the reform, plus the cash compensation ratio. *State* is an indicator variable that equals to one if the firm's ultimate controlling shareholder is a state-owned-enterprise or a government agency. *SGrowth* is the annual sales growth rate, averaged over the pre-reform years and *Illiquidity* is the average ratio of the daily absolute return to the (dollar) trading volume on that day, averaged over the pre-reform years. *LagPayout* is the cash dividend payout ratio in the prior year. See Table 1 for definitions of all other variables. T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Panel A: One-year horizon surrounding the reform

Independent Variable	Dependent Variable: Cash Dividend Payout Ratio				
	(1)	(2)	(3)	(4)	(5)
Reform	-0.077***	-0.098***	-0.081***	-0.122***	-0.147***
	(-6.46)	(-4.16)	(-4.07)	(-6.37)	(-4.62)
State	0.042***	0.029	0.042***	0.042***	0.022
	(3.05)	(1.50)	(3.05)	(3.03)	(1.12)
*Reform*State*		0.028			0.041
		(1.03)			(1.52)
Goodgvn	-0.034***	-0.034***	-0.034***	-0.071***	-0.073***
	(-2.80)	(-2.79)	(-2.80)	(-4.24)	(-4.34)
*Reform*Goodgvn*				0.074***	0.079***
				(3.21)	(3.36)
SGrowth	0.028	0.028	0.045*	0.028	0.042*
	(1.58)	(1.58)	(1.80)	(1.58)	(1.67)
*Reform*SGrowth*			-0.033		-0.027
			(-0.98)		(-0.78)
Illiquidity	0.839	0.860	-0.804	-0.752	-0.726
	(0.68)	(0.70)	(-0.39)	(-0.37)	(-0.36)
*Reform*Illiquidity*			2.576	2.525	2.542
			(1.14)	(1.12)	(1.13)
ROAVOL	-1.757***	-1.762***	-1.759***	-1.731***	-1.737***
	(-5.94)	(-5.95)	(-5.95)	(-5.86)	(-5.89)
LogTA	0.045***	0.045***	0.044***	0.045***	0.045***
	(6.36)	(6.38)	(6.26)	(6.33)	(6.37)
ROA	0.646***	0.652***	0.631***	0.602***	0.604***
	(3.88)	(3.91)	(3.78)	(3.61)	(3.62)
RE2TE	0.312***	0.311***	0.313***	0.320***	0.320***
	(5.65)	(5.63)	(5.67)	(5.78)	(5.77)
Cash	0.266***	0.265***	0.265***	0.265***	0.263***
	(5.00)	(4.98)	(4.99)	(5.00)	(4.96)
Leverage	-0.207***	-0.207***	-0.208***	-0.208***	-0.211***

	(-4.98)	(-5.00)	(-5.01)	(-5.01)	(-5.08)
LagPayout	0.597***	0.597***	0.596***	0.598***	0.598***
	(20.86)	(20.87)	(20.86)	(20.95)	(20.97)
Intercept	-0.978***	-0.969***	-0.960***	-0.949***	-0.941***
	(-6.66)	(-6.59)	(-6.45)	(-6.40)	(-6.32)
No of Observations	2,001	2,001	2,001	2,001	2,001
Likelihood Ratio	1,075	1,076	1,077	1,087	1,090

Panel B: Two-year horizon surrounding the reform

Independent Variable	Dependent Variable: Cash Dividend Payout Ratio				
	(1)	(2)	(3)	(4)	(5)
Reform	-0.067***	-0.052***	-0.075***	-0.105***	-0.086***
	(-7.50)	(-3.02)	(-5.12)	(-7.38)	(-3.65)
State	0.033***	0.043***	0.034***	0.033***	0.039***
	(3.32)	(3.10)	(3.35)	(3.32)	(2.78)
*Reform*State*		-0.020			-0.011
		(-1.03)			(-0.57)
Goodgvn	-0.030***	-0.030***	-0.030***	-0.053***	-0.052***
	(-3.42)	(-3.43)	(-3.43)	(-4.41)	(-4.26)
*Reform*Goodgvn*				0.047***	0.044***
				(2.77)	(2.59)
SGrowth	0.013	0.013	0.032*	0.012	0.030
	(1.06)	(1.07)	(1.73)	(1.00)	(1.64)
*Reform*SGrowth*			-0.034		-0.031
			(-1.40)		(-1.29)
Illiquidity	-0.969	-0.978	-3.077**	-3.176**	-2.991**
	(-0.97)	(-0.98)	(-2.08)	(-2.14)	(-2.01)
*Reform*Illiquidity*			3.383**	3.454**	3.243*
			(2.03)	(2.06)	(1.93)
ROAVOL	-1.046***	-1.049***	-1.045***	-1.031***	-1.043***
	(-5.36)	(-5.37)	(-5.35)	(-5.28)	(-5.34)
LogTA	0.036***	0.036***	0.036***	0.036***	0.036***
	(6.98)	(6.97)	(6.92)	(6.93)	(6.98)
ROA	0.381***	0.380***	0.361***	0.347***	0.345***
	(3.23)	(3.22)	(3.06)	(2.94)	(2.92)
RE2TE	0.378***	0.378***	0.381***	0.385***	0.385***
	(9.69)	(9.70)	(9.75)	(9.84)	(9.84)
Cash	0.283***	0.284***	0.282***	0.281***	0.281***
	(7.32)	(7.33)	(7.30)	(7.25)	(7.26)
Leverage	-0.257***	-0.256***	-0.258***	-0.256***	-0.258***
	(-8.63)	(-8.58)	(-8.67)	(-8.62)	(-8.67)
LagPayout	0.570***	0.570***	0.569***	0.570***	0.569***
	(26.86)	(26.87)	(26.87)	(26.91)	(26.89)
Intercept	-0.751***	-0.758***	-0.729***	-0.715***	-0.731***
	(-6.91)	(-6.96)	(-6.73)	(-6.61)	(-6.72)
No of Observations	3,870	3,870	3,870	3,870	3,870
Likelihood Ratio	1,889	1,890	1,895	1,901	1,903

Figure 3.1 Number of Firms by Reform Year

The figure plots the number of sample firms by their reform completion years. Our full sample includes 6,156 firm-year observations during the period of 2003-2011, representing 1,275 Chinese listed firms that had completed the split-share structure reform by December 31, 2011. We restrict the sample to firm-year observations within 3 years before and 3 years after the reform and the observations in the reform year are excluded.

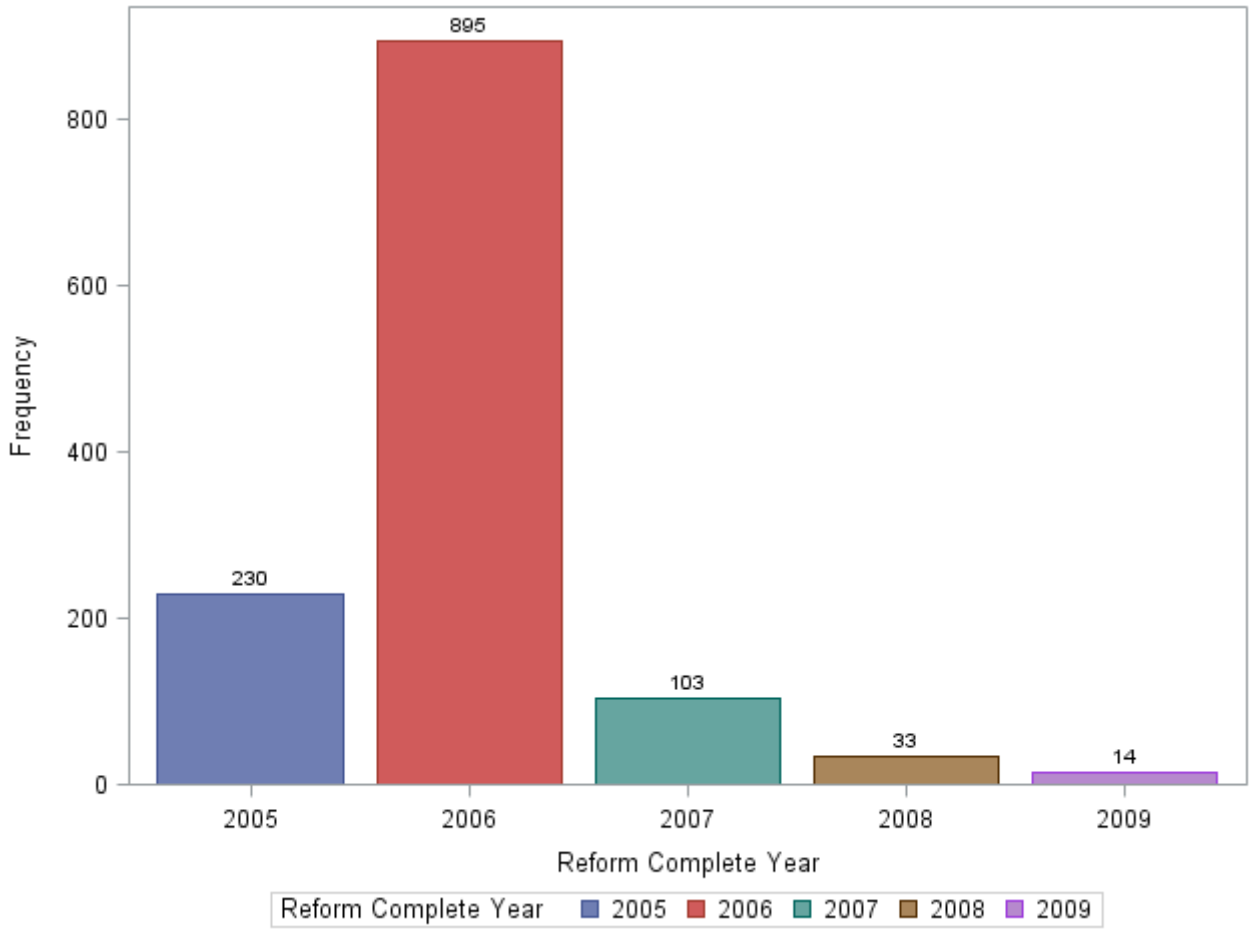
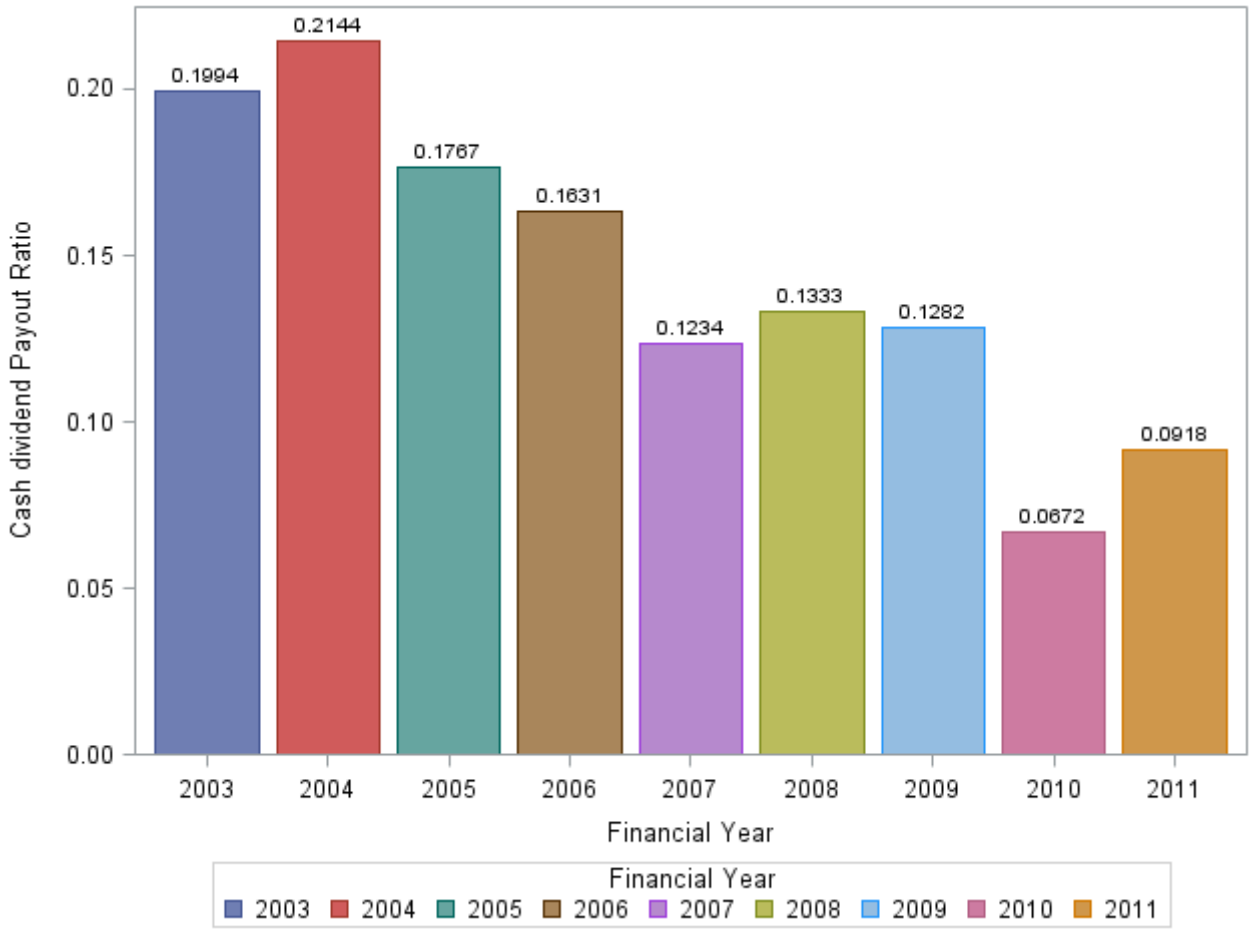


Figure 3.2 Cash Dividend Payout Ratio by Financial Year

The figure plots sample firms' cash dividend payout ratios by financial year. Our full sample includes 6,156 firm-year observations during the period of 2003-2011, representing 1,275 Chinese listed firms that had completed the split-share structure reform by December 31, 2011. We restrict the sample to firm-year observations within 3 years before and 3 years after the reform and the observations in the reform year are excluded.



Chapter 4 Financial Constraints, Financing Capacity and Dividend Policy

4.1 Introduction

Prior research suggests a value-enhancing effect of corporate dividend initiations and increases by reporting that positive abnormal stock returns are associated with dividend initiation and increase announcements (see, for example, Michaely, *et al.* (1995); Grullon, *et al.* (2002)). However, dividend-increasing firms could suffer from a decline in corporate liquidity following dividend increases in the form of reduced cash balances and additional financing leverage because these firms typically spend cash or increase borrowing to finance the increased dividend payments (Jensen (1986); Stephens and Weisbach (1998)). If dividend-increasing firms are financially constrained prior to the increase, deteriorated corporate liquidity can be extremely damaging. They are more exposed to financial distress risk due to diminished cash balances[29] and could also experience underinvestment in the product market and become less competitive as financing future investment becomes more difficult.[30] For these reasons, decisions to increase dividends appear to be less desirable for financially constrained firms.

Contrary to this common belief, financially constrained firms sometimes choose to increase dividends (Masters, *et al.* (2013)) or repurchase shares (Chen and Wang (2012)). However, most studies show that dividend increases by financially constrained firms do not enhance firm value, as both stock returns and operating performance suffer in both the short and long term, relative to their unconstrained counterparts (Chen and Wang (2012); Masters, *et al.* (2013)).

Why would a constrained firm increase dividends if such an increase does not improve firm value? Previous studies provide some possible answers. For example, Chen and Wang (2012) suggest that managerial overconfidence may explain why constrained firms buy back shares by showing that constrained firms tend to buy back more shares when their managers are more overconfident.[31]

In our paper, we propose that enhancing financing capacity could be a potential motivation for financially constrained firms to approach dividend-increasing decisions.[32] Due to the existence of

[29] See Opler, Pinkowitz, Stulz and Williamson (1999), Kaplan and Zingales (2000), Lamont, Polk and Saa-Requejo (2001), Almeida, Campello and Weisbach (2004), Whited and Wu (2006), and Denis and Sibilkov (2010) for a detailed discussion.

[30] See, for example, Chevalier and Scharfstein (1994), Campello (2003), and Almeida, *et al.* (2004).

[31] Share repurchase and dividend increase are substitutes in most classic dividend theories, such as the dividend irrelevancy theory of Miller and Modigliani (1961), the agency theories of Easterbrook (1984) and Jensen (1986), and the signaling models of Bhattacharya (1979) and Miller and Rock (1985). Thus, we borrow related findings here.

[32] Hereinafter, by the term "financing capacity", we refer to the capacity to obtain public financing in the secondary market.

information asymmetry, seasoned equity offering (SEO) announcements are usually associated with negative market reactions (Korajczyk, Lucas and McDonald (1991); Bayless and Chaplinsky (1996)), while dividend announcements could reduce potential information asymmetry (Howe and Lin (1992); Khang and King (2006); Li and Zhao (2008)). Therefore, firms have incentives to utilize dividend payments to mitigate future financing costs (via the reduction of information asymmetry). The incentive is even stronger for constrained firms, as they typically face a higher level of information asymmetry and thus higher costs of external funds.

Prior studies establish a link between financing capacity and dividend-increasing decisions to some extent. However, most of them (see, e.g., Li, Wang and Qi (2006); Masters*, et al.* (2013)) suffer from the problem of endogeneity arising from the interdependence of financing and dividend decisions. Specifically, on the one hand, a firm's dividend policy is closely related to its financing capacity because dividend payments rely on the sufficiency of retained earnings, the proportion of which in total internal funds is subject to the availability of external finance. On the other hand, the financing capacity is dependent on dividend policy. For example, firms would choose to strategically pay higher dividends to develop good reputations and reduce future financing costs (La Porta*, et al.* (2000)), especially for financially constrained firms. Without properly addressing this endogeneity issue, the association between financing capacity and dividend decisions observed in the existing empirical work cannot be identified as evidence of causality as financing and dividend decisions can be endogenously determined. Thus, the question of whether financing capacity has an effect on dividend policy remains an unsolved empirical issue.

In this chapter, we attempt to mitigate the potential problem of endogeneity by examining a mandatory regulation on financing qualification that was enacted by the China Securities Regulatory Commission (CSRC, the equivalent of the Securities and Exchange Commission in the U.S.) in 2008.[33] In the "Decisions on Amending Provisions on Cash Dividends by Listed Firms" published in October 2008, the CSRC specified that for listed firms intending to publicly issue new securities, the accumulated cash dividends distributed over the past three years must be no less than 30% of the average realized annual distributable profits. This regulation imposes a stricter restriction on firms' financing qualification, and it was also the first time that the CSRC formally stressed the importance of cash dividends over other distribution types.[34]

[33] Hereinafter, by the term "financing qualification", we refer to the eligibility to publicly issue securities with respect to the dividend requirement.

[34] The 2008 regulation increased the dividends requirement to 30% of average profits, from the 20% stipulated in a regulation released in 2006. Details on these regulations are introduced in Section 4.2.

This regulation provides an ideal experimental setting for our research. Given its coerciveness, the regulation can be regarded as an exogenous shock to firms' external financing capacity but without having a universal impact on dividend policy because it is applicable only if the firm is seeking external financing in the public secondary market. In this regard, utilizing the regulation to design a quasi-natural experiment could effectively identify the causal effect of financing capacity on dividend policy and attenuate the potential endogeneity problem. Moreover, the approach of a quasi-natural experiment could also alleviate the confounding effect of other correlated omitted variables.

We examine how this shock to financing capacity affects firms' dividend decisions, with a focus on financially constrained firms. As the 2008 regulation mandatorily associates dividend payment with firms' financing qualification, it essentially dampens firms' external financing capacity, and the impact is particularly pronounced for financially constrained firms, as they are usually the firms with a greater demand for external finance and thus place greater value on financing eligibility. [35] Therefore, we expect that in the post-regulation period, financially constrained firms are more likely to pay cash dividends and pay more dividends than do unconstrained firms to satisfy the regulatory requirement and thereby obtain financing eligibility.

We use a sample of 8,758 firm-year observations from 941 non-financial firms listed on the Shanghai and Shenzhen Stock Exchanges from 2003 through 2012. Following Whited and Wu (2006), we construct a synthetic Whited-Wu index (WW index, hereinafter) to measure the degree of a firm's financial constraints, and the value of the index represents the wedge between the internal and external costs of funds. Our results verify that this index is informative of the extent to which a firm is financially constrained.

We begin by examining how listed firms respond to a shock to financing capacity. Our results show that the deterioration in financing capacity (triggered by the 2008 regulation) affects firms' dividend policy. Firms, on average, are more likely to pay cash dividends after the regulation, but they pay less than before.

Applying the WW index to categorize our sample firms into constrained and unconstrained firms, we observe that the regulation alters the relationship between financial constraints and dividend policy. Before the regulation, constrained firms are less willing to pay cash dividends than unconstrained firms; when they do pay, they tend to pay lower dividends. This pattern, however, is reversed after the regulation comes into effect. Financially constrained firms become more willing to pay cash dividends than unconstrained firms and also pay higher dividends in relative terms.

[35] See a detailed discussion in Section 4.3.

Furthermore, we find that the behavior of financially constrained firms differs from that of unconstrained firms when affected by the shock to financing capacity. Specifically, although both constrained and unconstrained firms display a post-regulation increase in the propensity to pay cash dividends, the magnitude of the increase is much smaller for unconstrained firms. Constrained and unconstrained firms both reduce their dividend payments after the regulation, but the reduction in dividends is less significant for financially constrained firms. As a robustness check, we use three alternative measures of financial constraints that are suggested by prior studies (i.e., firm size, state ownership and sales growth) and re-perform our tests. Our conclusions remain unchanged, and hence our results are not driven by the use of a particular measure of financial constraints.

We further examine whether financially constrained firms increase dividends (relative to unconstrained firms) for the exact purpose of enhancing external financing capacity. We build our analysis upon the investigation of firms' propensity to finance in the equity market before and after the 2008 regulation and perform a cross-sectional comparison between financially constrained and unconstrained groups. The basic intuition is that if constrained firms increase dividends precisely for the purpose of improving their financing capacity, they will seize the opportunity to acquire external finance once they satisfy the financing qualification via increasing dividends. As a result, we should observe an increase in the probability of financing for constrained firms after the regulation. Constrained firms should also be more likely to finance than their unconstrained counterparts because the relatively high cost of external financing makes them more appreciative of the financing opportunity. Therefore, financing activities in the post-regulation period should be concentrated in constrained firms that are also qualified for public financing.[36]

Our results confirm that among all qualified firms, firms that are financially constrained in particular increase their propensity to finance publicly in the secondary market during the post-regulation period. Combined with our previous findings that financially constrained firms increase both their propensity to and the amount they pay after the regulation (relative to their unconstrained counterparts), our results provide a possible answer to the question of why financially constrained firms increase dividends. Our evidence suggests that the desire to enhance external financing capacity is a potential incentive for constrained firms to increase cash dividend payments.

Our study advances the literature on the relationship between financial constraints and corporate dividend policy by empirically examining how financial constraints affect dividend policy in the presence of financing concerns. Such an examination greatly enriches the existing knowledge

[36] Hereinafter, by the term "qualified firms", we refer to firms that satisfy the dividend requirement for public financing.

of the real effects of financial constraints. We gain a deeper insight into the relationship between financial constraints and corporate behaviors.

Our paper also contributes by highlighting the effect of external financing capacity on dividend policy. As Chinese listed firms, especially non-state-owned firms, rely heavily on external financing, identifying financing capacity as an influential factor enriches the understanding of the determinants of dividend policy in Chinese listed firms. From a methodological perspective, our study contributes by identifying a setting in which firms experience an exogenous shock to their financing capacity, thereby enabling us to identify the causal effect of financing capacity on cash dividends. Our setting avoids the inference problems arising from the concern that both cash dividends and financing capacity can be endogenously determined.

Finally, our study extends the research on the dividend regulations in the Chinese capital market. The issue of low dividends (in particular, low cash dividends) by listed firms has aroused considerable concern among regulators. The CSRC released a number of regulations in recent years in an attempt to promote cash dividend payments and establish long-term dividend policy. Therefore, investigating the implications of such regulations for firms' dividend policy is of particular importance, as it could provide real evidence on whether these regulations achieve the goals of regulators.

The chapter is organized as follows. Section 4.2 introduces the regulations on dividend policy and public financing in the Chinese capital market. Section 4.3 reviews the related literature and develops our hypotheses. Our data and methodology are described in Section 4.4. Sections 4.5 to 4.7 present our empirical analyses, and our robustness check is reported in Section 4.8. The final section concludes the chapter and offers some discussion.

4.2 Regulations on dividend policy and public financing in China

In China, dividend payments are usually associated with considerable financing programs (Lee and Xiao (2004)). This could be a consequence of the mandatory regulations imposed in recent years that stipulate dividend payment as a necessary condition for external financing. While firms in developed economies generally tend to have stable dividend polices, most Chinese listed firms are experiencing rapid growth with a focus on capital accumulation and expansion. Therefore, they have fewer dividend initiations and lower dividend payments (Shao and Lin (2004)). Recognizing the fact that the interests of minority shareholders are not properly protected, in recent years the CSRC has pursued mandatory regulations on dividend policy, which are intended to encourage listed firms to establish long-term dividend policies and to promote cash dividend payments.

On November 6 2000, Fuchun Fan, vice chairman of the CSRC, declared that the authorities were considering cash dividend payment as a necessary condition for listed firms to offer a rights issue or seasoned equity issue. Following that, in March 2001, the CSRC released the "Administration Measures for New Shares' Issuance by Listed Firms" and formally stipulated that the underwriters of common equity must pay close attention to the public financing applications (i.e., rights issues, seasoned offerings and convertible bond issues) by firms that had failed to pay a dividend in the past three years without their Boards of Directors having provided any justifiable explanation. Two months later, in the "Guidance on the Approval of New Shares' Issuance", the CSRC further required the regulating authority to investigate the payout status, especially the payout ratio of cash dividends, in the past three years when approving listed firms' financing applications. This was the first attempt by Chinese regulators to officially associate dividend payment with firms' financing qualification. However, the CSRC did not specify the minimum amount to be distributed as dividends. Additionally, the payment of dividends was not compulsory provided that the firms' Boards of Directors provided satisfactory explanations for not paying dividends.

In an attempt to further protect shareholders' rights (especially the rights of individual shareholders), the CSRC asserted in December 2004 that firms failing to pay cash dividends in the past three years will not be allowed to issue new shares, offer rights issues or issue convertible bonds. In May 2006, the "Administration Measures for New Shares" was revised to the "Administration Measures for Security Issuance". In this new edition, the CSRC further stipulated that, for listed firms intending to publicly issue new securities, the total cash or stock dividends distributed over the past three years must be no less than 20% of the average realized annual distributable profits.

More recently, in the "Decisions on Amending Provisions on Cash Dividends by Listed Firms" published in October 2008, the CSRC further specified the type of dividends (i.e., cash dividends) to be paid by listed firms when seeking public financing. The main purpose was to ensure a stable distribution of cash dividends. More important, this new regulation reinforced the protection of individual shareholders' rights by imposing a stricter restriction on firms' public financing qualification. To meet the financing requirements, the firm's accumulated cash dividends distributed over the past three years must be more than 30% of the average realized annual distributable profits, whereas the 2006 regulation stipulated 20%. This was the first time that the CSRC formally stressed the importance of cash dividends over other distribution types. Therefore, this announcement is widely considered the most powerful regulation on dividend policy and public financing and is expected to exert considerable influence on listed firms' cash dividend policy.

Given its significance, we employ the 2008 regulation as the setting for our study on the interaction between financing and dividend decisions. The appeal of this research design is that the regulation can be considered exogenous to firms' dividend decision process because it affects only the financing capacity but has no (or little) effect on dividend policy itself or other factors related to dividends, as the regulation is applicable only if the firm wishes to publicly finance in the secondary market. Therefore, our setting avoids the problems of endogeneity and correlated omitted variables and helps us to clearly identify the causal effect of financing capacity on dividend policy.

4.3 Literature review and hypothesis development

4.3.1 Financial constraints

Modigliani and Miller (1958) argue that in a frictionless external capital market, firms can raise sufficient funds for all positive NPV (net present value) investment projects at a cost equal to that of internal capital. Therefore, external funding can fully cover the insufficiency of internal funds. That is, investment and growth do not depend on the availability of internal capital. Once capital market imperfections are introduced, however, internal and external forms of capital are not perfect substitutes. For example, the information asymmetry between investors and management increases the cost of external capital relative to internal funds (Myers and Majluf (1984)). The wedge between the internal and external costs of funds describes the extent to which a firm is financially constrained.

The literature examining the effect of financial constraints on firm behavior has traditionally focused on corporate investment decisions. When external financing is more costly than internal funding, firms are not necessarily able to pursue all value-increasing investment opportunities. Corporate investment is subject to the sufficiency of internal funds and the availability of external funding. Fazzari, Hubbard and Petersen (1988) argue that the change in cash flows is an important determinant of marginal capital spending for constrained firms and that the sensitivity of investment to cash flows increases in the degree of financial constraints.[37] Much subsequent research has also supported the influential role of financial constraints in firms' investment decision process (see, for example, Hoshi, Kashyap and Scharfstein (1991); Whited (1992); Calomiris and Hubbard (1994); Gilchrist and Himmelberg (1995); Lamont (1997)).

[37] Although Fazzari, *et al.* (1988) report evidence consistent with their hypothesis, the interpretation of their findings has been challenged on both theoretical and empirical grounds. For example, Kaplan and Zingales (1997) question the validity of investment-cash flow sensitivities as a measure of financial constraints. Erickson and Whited (2000) and Alti (2003) also note that there is significant measurement error problem with Tobin's Q.

The first study in the literature incorporating financial constraints in asset pricing models as a risk factor is Lamont, *et al.* (2001). Based on the regression coefficient estimates in Kaplan and Zingales (1997), Lamont, *et al.* (2001) construct a "synthetic KZ index" as a measure of financial constraints. They find that financially constrained firms appear to share common variation in their stock returns, suggesting the existence of a financial constraints factor, but that the constraints factor does not earn a significant risk premium. Building upon a standard intertemporal investment model that incorporates financial constraints, Whited and Wu (2006) estimate the nonlinear structural Euler equation to derive a financial constraints index ("WW index") for each firm and then construct return factors on the estimated constraints index. Although their evidence shows that the (positive) risk premium earned by financially constrained firms is not statistically significant, their work provides an important link between the level of financial constraints and firm-specific characteristics. Relatedly, Gomes, Yaron and Zhang (2006) adopt a production-based asset pricing framework to explicitly model the effect of financing frictions and suggest that financial constraints constitute a common risk factor that can improve the pricing of the cross-section of expected returns. More recently, Campello and Chen (2010) document evidence that financially constrained firms have greater systematic risk and that the risk associated with being financially constrained is priced in financial markets.

4.3.2 Financial constraints and dividend policy

In the literature on financial constraints, the dividend payout ratio is commonly used as an a priori criterion to identify costly external finance (see, for example, Fazzari, *et al.* (1988); Kaplan and Zingales (1997); Almeida, *et al.* (2004); Denis and Sibilkov (2010); Almeida and Campello (2010)); this is motivated by the expectation that low-dividend firms have little internal cash to finance investments and thus must rely on external sources. Specifically, Whited and Wu (2006) treat firms' dividend payment status as an important determinant of the WW financial constraints index. The general conclusion is that financially constrained firms tend to pay lower cash dividends and also have a weaker desire to pay. Because financially constrained firms are subject to relatively high costs of external funds, they tend to retain most of the low-cost internal funds that they can generate to smooth investment and thus distribute little or no income.

In the context of the Chinese capital market, it is also clear that cash dividends are adversely affected by the extent of financial constraints (see, e.g., Wei and Liu (2004); Li, *et al.* (2006); Zhang and Lv (2007)). A limitation in many Chinese studies is the use of a single firm characteristic as the proxy for financial constraints, for instance, firm size (Yan and Wang (2011); Xie and Fang (2011); Han and Zhou (2011); Zhong and Lu (2013)), firm age (Xie and Fang (2011)) and state

ownership (Lian and Cheng (2007); Guo and Ma (2009); Guo and Wei (2011)). Bushman, Smith and Zhang (2011) note that the commonly used proxy of firm characteristics is highly correlated with firm growth; therefore, sorting using these variables may not reflect the difference in the degree of financial constraints but rather the difference in firm growth. Our study avoids such measurement error by applying a synthetic WW index constructed based on a structural investment model (following Whited and Wu (2006)) and efficiently identifies the firms that face external financial constraints. Equipped with a direct measure of firms' financially constrained status, we propose that:

H1a: Before the 2008 regulation, financially constrained firms have a lower propensity to pay cash dividends than unconstrained firms.

H1b: Before the 2008 regulation, financially constrained firms pay lower cash dividends than unconstrained firms.

4.3.3 Financing capacity and dividend policy in financially constrained firms

As Jensen (1986) and Stephens and Weisbach (1998) note, increasing dividends can increase leverage and reduce cash, and thus corporate liquidity. If dividend-increasing firms are financially constrained prior to the increase, diminished corporate liquidity can be harmful. With less cash, these firms are more likely to be exposed to financial distress risk (Opler*, et al.* (1999); Kaplan and Zingales (2000); Lamont*, et al.* (2001); Almeida*, et al.* (2004); Whited and Wu (2006); Denis and Sibilkov (2010)). Due to the increased difficulty in seeking external financing, financially constrained firms could also experience underinvestment in the product market and become less competitive (Chevalier and Scharfstein (1994); Campello (2003); Almeida*, et al.* (2004)). As dividends are commonly regarded as "sticky" (Lintner (1956)), financially constrained firms, therefore, are expected to be less likely to increase dividends.

In contrast to this widely accepted view, financially constrained firms sometimes choose to increase dividends (Masters*, et al.* (2013)) or repurchase shares (Chen and Wang (2012)). However, most studies show that dividend increases by financially constrained firms do not enhance firm value. For example, Chen and Wang (2012) find that relative to unconstrained firms, financially constrained firms experience significantly weaker market reactions (in both the short and long term) after they announce share repurchase programs. Constrained repurchasers also underperform in terms of operating profitability. Furthermore, they are more vulnerable to increased financial risk because of diminished corporate liquidity in the post-buyback period. Similarly, Masters*, et al.* (2013) document lower abnormal stock returns and operating performance for financially

constrained firms after dividend-increase announcements, relative to their unconstrained counterparts.

As share repurchases and dividend increases do not enhance shareholder wealth, the potential incentive for financially constrained firms to make such decisions is worth investigating. Chen and Wang (2012) show that constrained firms tend to buy back more shares when their managers are more overconfident (e.g., when they overestimate the future returns of their firms and postpone the exercise of their stock options) and that these firms are associated with even poorer post-buyback stock performance. Their results suggest that managerial overconfidence may explain why constrained firms repurchase.

Another possible explanation is related to financing capacity. Prior studies find that that SEO announcements are usually associated with negative market reactions due to the existence of information asymmetry (Korajczyk*, et al.* (1991); Bayless and Chaplinsky (1996)). The dividend literature provides compelling evidence that relative to non-payers, information asymmetry is less acute for dividend payers (Howe and Lin (1992); Khang and King (2006); Li and Zhao (2008)). Therefore, the market reacts less negatively to dividend payers' SEO announcements than to nonpayers' announcements (Booth and Chang (2011)). Moreover, Deshmukh (2005) shows that issue costs are adversely associated with dividend yield. Hence, for firms seeking external financing, dividend-paying behavior may be driven by the incentive to mitigate financing costs (via the reduction of information asymmetry). The incentive is more pronounced for constrained firms than for their unconstrained counterparts, as the former typically face a higher level of information asymmetry and, consequently, higher costs of external funds. Masters*, et al.* (2013) provide evidence that constrained firms use dividends to enhance their external financing potential. However, a limitation of their study is that they focus on the market reactions to the dividend-increasing announcements followed by SEOs. With respect to how financing capacity affects the dividend-increasing decisions of financially constrained firms, they only provide univariate evidence with limited explanatory power.

According to La Porta*, et al.* (2000), in countries with weak legal protections for minority shareholders, firms pay higher dividends to develop reputations that they treat shareholders well to be able to raise external funds on attractive terms. As there are relatively weak protections for minority shareholders in China (Chen and Xu (2001)), the incentives for firms to use dividend increases to develop good reputations and thereby reduce future financing costs are even stronger, especially when firms are financially constrained. Wei and Jiang (2001) conduct a survey on Chinese listed firms' dividend policy and find that firms consider current and future financing needs

when making dividend decisions. Li, *et al.* (2006) also report that financing capacity is the most important determinant of dividend policy, especially for non-state-owned listed firms, which are normally considered more financially constrained than state-owned firms.

Although previous studies establish a link between financing capacity and dividend increases to some degree, most of them (see, e.g., Li, *et al.* (2006)) suffer from the problem of endogeneity arising from the fact that financing and dividend decisions are interdependent. On the one hand, firms' dividend policy is closely related to financing capacity because dividend payments rely on the sufficiency of retained earnings, the proportion of which in total internal funds is subject to the availability of external finance. On the other hand, a firm's financing capacity is dependent on dividend policy. For example, firms would choose to pay higher dividends to develop good reputations and reduce future financing costs (La Porta, *et al.* (2000)), especially for financially constrained firms.

4.3.4 A shock to financing capacity: dividend implications

In this chapter, we attempt to mitigate the endogeneity issue by examining a mandatory Chinese regulation on financing qualification that was announced by the CSRC in 2008.[38] This regulation provides an ideal experiment for our research. Specifically, given its coerciveness, the regulation can be regarded as an exogenous shock to firms' public financing capability but without having a universal impact on dividend policy per se because it is applicable only if the firm is seeking financing in the public secondary market. In this regard, utilizing the regulation to design a quasi-natural experiment could effectively identify the causal effect of financing capacity on dividend policy and attenuate the potential endogeneity problem. Moreover, this approach using a quasi-natural experiment could also alleviate the confounding effect of other correlated omitted variables.

As the 2008 regulation mandatorily associates dividend payment with firms' financing qualification, it essentially dampens firms' financing capacity. There are two channels through which the regulation affects corporate dividend policy.

4.3.4.1 The "residual dividend" effect

On the one hand, according to the residual dividend policy theory (Preinreich (1932); Sage (1937); Miller and Modigliani (1961)), firms pay out excess cash as dividends only after all profitable investments are financed. When the 2008 regulation damages their ability to obtain external financing, firms are forced to depend more on internally generated funds and reduce their demand for external financing. As a result, the greater inclination to save internal funds (for future

[38] The details on the 2008 regulation can be found in Section 4.2.

investment needs) would lead to a decrease in the probability of paying cash dividends and a decline in the payout ratio. We refer to this effect as the "residual dividend" effect. For financially constrained firms, however, this effect may be contaminated by the complementarity between internal funds and the demand for external financing.

Contrary to the standard pecking order theory, when a firm is financially constrained, its investment choice becomes endogenous to external financing decisions (Almeida and Campello (2010)). The interdependence of financing and investment decisions could fundamentally affect the relationship between internal funds and external financing. Because of the higher opportunity cost of investment faced by constrained firms, they are more inclined to retain internal funds for additional capital expenditures and reluctant to use internal funds to substitute for external financing. Moreover, tight financing constraints create a direct incentive for these firms to keep internal funds to meet future investment needs in addition to current investment needs. As a result, financially constrained firms do not seem to show an inclination toward internal funds and they may not reduce the demand for external financing even when profitability increases (i.e., a complementarity between internal funds and external financing) (Almeida and Campello (2010)).

Following this line of argument, financially constrained firms have considerable demand for external financing even when regulation further restrains their financing ability. Therefore, once such regulation is implemented, they are expected to have a strong motivation to pay dividends to maintain their financing capacity. In this regard, the magnitude of the reductions in both the propensity to pay and the payout ratio would be smaller for constrained firms, relative to unconstrained firms.

4.3.4.2 The "qualified dividend" effect

On the other hand, as the public financing requirement is stricter after the regulation is imposed, firms that are no longer qualified may seek to recover their financing eligibility, as Chinese listed firms have a strong preference for public financing (see, Huang and Zhang (2001)). Therefore, it is highly plausible that firms would pay or increase their cash dividends after the regulation, thereby allowing them to satisfy the dividend requirement and recover their external financing capacity. We term this possibility the "qualified dividend" effect.

In particular, this "qualified dividend" effect is more pronounced for financially constrained firms. As these firms typically have less financing ability (resulting from the high costs of external funds), and thus assign greater value to obtaining financing eligibility, financially constrained firms are more eager to recover their financing capacity in the post-regulation period. Hence, in terms of

dividend policy, constrained firms are expected to be more likely to pay cash dividends than unconstrained firms and pay higher dividends.

In summary, the "residual dividend" effect and the "qualified dividend" effect yield different predictions of how firms' dividend policies change after the regulation is imposed. If the "residual dividend" effect dominates, we could observe decreases in both the propensity to pay and the payout ratio. Instead, if the "qualified dividend" effect overwhelms the former, increases should be observed. Which effect prevails is then an empirical question.

However, both the "residual dividend" effect and the "qualified dividend" effect consistently predict that when experiencing a shock to financing capacity, financially constrained firms behave differently from unconstrained firms. Relatively speaking, financially constrained firms appear to be more reluctant to cut dividends or depress their desire to pay; rather, they are more willing to pay or increase dividends after the regulation.

These predictions lead to our second set of hypotheses:

H2a: Compared to unconstrained firms, the post-regulation increase (decrease) in the propensity to pay cash dividends is more (less) significant for financially constrained firms.

H2b: Compared to unconstrained firms, the post-regulation increase (decrease) in cash dividends is more (less) significant for financially constrained firms.

4.3.5 Dividend increases and future financing

Our second set of hypotheses predicts that relative to unconstrained firms, financially constrained firms are more willing to pay or increase dividends after the regulation. If our conjecture is correct, then the questions become why financially constrained firms choose to increase their dividends and whether they increase dividend payments for the purpose of public financing.

The 2008 regulation further stipulates that the accumulated cash dividends distributed over the past three years must be no less than 30% of the average realized annual distributable profits if listed firms intend to publicly issue new securities. A direct consequence is that qualified firms (in terms of the dividend requirement) will have an advantage in acquiring approval for their financing applications. Given this advantage, these firms are more likely to engage in public financing activities. Therefore, we should observe a post-regulation increase in the probability of financing for qualified firms. Furthermore, among these qualified firms, financially constrained firms are expected to have a greater desire to finance than their unconstrained counterparts. On the one hand, constrained firms are confronted with higher external financing costs; hence, they will benefit more if they take advantage of this financing qualification. On the other hand, financially constrained

firms may engage in precautionary savings to reduce their future need for funds (Hennessy and Whited (2007)). Thus, once they satisfy the financing qualification, they will seize the opportunity to finance. Therefore, we conjecture that:

H3: In the post-regulation period, financing activities are concentrated in financially constrained firms that are also qualified for public financing.

4.4 Data and methodology

4.4.1 Sample design

Our data are from the China Stock Market and Accounting Research (CSMAR) database. The original sample covers all Chinese non-financial firms listed on the Shanghai and Shenzhen Stock Exchanges during the period from 2003 to 2012.[39] We restrict the sample to the post-2000 period because Chinese listed firms began to apply a consistent and unified set of accounting standards in 2000 and the controlling shareholder data begin in 2003. We construct our sample by first deleting any firm-year observations with missing data or for which total assets, the capital stock, or sales are either zero or negative. Following Whited and Wu (2006), we also exclude any firm for which the reported short-term debt is greater than the reported total debt or for which the reported changes in capital stock cannot be covered by the reported sales of capital goods and by the reported depreciation to avoid coding errors. Furthermore, we remove firms that are delisted, under 'Special Treatment (ST)' and 'Particular Transfer (PT)'.[40] This screening criterion is important because we wish to identify firms with financial constraints rather than firms that are in financial distress.

Since 2005, all dividends, including stock dividends, are taxed at 10% in China. As listed firms need to withhold the dividend tax, many firms pay cash dividends simply to cover the tax payable induced by stock dividends. Following the approach in Lee and Xiao (2004) and Huang*, et al.* (2011), we drop dividend observations with a non-zero before-tax cash dividend but with a zero after-tax dividend to achieve a clear classification of cash dividend payers. This leaves us with a final sample of 8,758 firm-year observations, representing 941 non-financial listed firms on the Chinese stock market.

[39] The sample period for our tests on dividend policy is 2003-2012. The estimation of the Euler equation requires using instruments dated at *t-2*; hence we extend the sample period to 2001-2012 when we estimate the nonlinear generalized method of moments (GMM).

[40] China has an investor warning system. If a firm has a negative net income for two consecutive years, then the CSRC gives ST to the shares of the company. The daily price change limit for ST firms is 5%. A firm that has consecutive losses for three years is further classified as an ST* firm. If the firm continues to lose money, it faces delisting and the trading of its shares is suspended. PT is a trading service offered for suspended stocks on every Friday. Cash dividend payments are restricted for firms with ST, ST* and PT status.

Table 4.1 provides definitions for all of the variables that are either investigated or used as controls in our tests. Our dividend variables are *CDPayer*, an indicator that equals one if the firm pays a cash dividend in the current financial year and zero otherwise, and *Payout*, the dividend payout ratio calculated as the total cash dividends divided by the EBIT (earnings before interest and tax). To capture the effect of the regulation, we define a dummy variable, *Regulate*, which takes a value of one if the current financial year is after the release of the 2008 dividend regulation and zero otherwise. Concerning certain extreme values, *Payout* is winsorized at the top and bottom one percent and *SG* (sales growth) at the top one percent of their respective distributions.

[Insert Table 4.1 about here]

4.4.2 Methodology

4.4.2.1 Measuring financial constraints

There are two common approaches to estimate the extent to which a firm is financially constrained: the Q-theory model and the Euler equation, both of which build upon the dynamic optimization model of investment. The Q-model, however, is criticized for its significant measurement error and identification problems (see Kaplan and Zingales (1997); Alti (2003); Erickson and Whited (2000)) and is more data-demanding. Zhang, Yang, Ma and Huang (2012) also note that the market valuation of capital, a proxy for the marginal Q, is difficult to estimate in many developing countries due to the imperfections of financial markets. Therefore, in this chapter, we use the Whited-Wu (WW) index to measure financial constraints. This index owes its origins to Whited and Wu (2006) and is constructed via generalized method of moments (GMM) estimation of an investment Euler equation. The construction of the financial constraints index begins with a standard partial-equilibrium investment model, in which financial constraints are interpreted as the shadow cost associated with raising new equity and imply that external (equity) financing is costly relative to internal finance.[41] Following the approach developed by Whited and Wu (2006), we parameterize the shadow cost of new equity financing as a function of observable firm characteristics using Chinese data. A slight difference from Whited and Wu (2006) is that we do not include the dividend-paying indicator in the function, as our study explicitly concerns dividend policy. Instead, we include an indicator to control for the effect of state ownership on the shadow cost, considering that state-owned-enterprises in China have an inherent advantage in receiving external financing, not only from government support (Qian (1994)) but also from state-owned banks (Kornai (1998); Tian (2005)). The specification is as follows:

[41] Regarding the details of this investment model, please refer to Whited and Wu (2006).

$$\lambda_{it} = b_0 + b_1 LTD_{it} + b_2 SOE_{it} + b_3 SG_{it} + b_4 LogTA_{it} + b_5 ISG_{it} + b_6 Cash_{it} + b_7 CF_{it} + b_8 NA_{it} + b_9 IDAR_{it} \quad (4.1)$$

Where b_i is the parameter to be estimated; *LTD* is the ratio of the long-term debt to total assets; *SOE* is an indicator variable that equals one if the firm's ultimate controlling shareholder is a state-owned-enterprise and zero otherwise; *SG* is the firm's annual sales growth; *LogTA* is the natural log of total assets; *ISG* is the firm's industry sales growth; *Cash* is the ratio of cash, marketable securities and short-term investments to total assets; *CF* is the ratio of cash flows to total assets; *NA* is the number of analysts following the firm; and *IDAR* is the firm's industry debt-to-assets ratio. The fitted value of λ_{it} is the WW financial constraints index. A higher value of λ_{it} suggests a higher degree of financial constraints.

Following Whited and Wu (2006), we apply GMM and estimate the nonlinear Euler equation in first differences to eliminate potential firm fixed effects.[42] Our instruments comprise all of the Euler equation variables and also include inventories, depreciation, current assets, current liabilities, and tax payments. All of the instruments are normalized by total assets. Unlike Whited and Wu (2006), we do not include either the ratio of dividends to total assets (because dividends are our research object) or the average ratio of cash flows to assets over the past three periods (given its high correlation with other variables) as predictors of profitability. Instead, we include a dummy that equals one if the ratio of cash flows to assets was positive in the previous year to proxy for profitability. Because the Euler equation is estimated in first differences, all of the instrumental variables are lagged two periods in the GMM estimation.

Table 4.2 reports the estimation results of the GMM estimation of the Euler equation. Column (1) contains estimates from the most general specification of the model, with all nine of the financial-health variable in equation (4.1) included. The subsequent column is the estimation result of the model from which we drop the constant (because it has the smallest t-statistic). The coefficients of all the explanatory variables have the expected signs in Column (2), consistent with the predictions in the literature, except for *LTD* and *NA*.[43] For example, *SOE* is associated with a positive coefficient, suggesting that state-owned listed firms are less likely to be financially constrained. This is consistent with the evidence in China that state-owned listed firms possess greater access to external financing (Qian (1994); Tian (2005)). The negative sign on the *LogTA* indicates that small firms are subject to greater financial constraints. This essentially captures the well-documented size effect (see, for instance, Beck, Demirgüç-Kunt and Maksimovic (2005)). The

[42] The Euler equation is given by equation (10) of Whited and Wu (2006).
[43] This is not unexpected, as Chinese listed firms have a strong preference for equity financing (see Huang and Zhang (2001)) and that the industry of security analysts remains at an early stage of development (Zhang and Lv (2007)).

combination of *SG* (with a negative coefficient) and *ISG* (with a positive coefficient) can effectively identify firms' financially constrained status because only firms in high-growth industries but with low individual sales growth wish to invest more so as to be constrained (Whited and Wu (2006)). Both *Cash* and *CF* enter with negative signs, which is consistent with theoretical predictions. Firms with high cash holdings and sufficient cash flows are interpreted as being financially healthier, and such firms are less likely to be financially constrained. Finally, the extent of financial constraints is greater for firms in low-debt capacity industries, resulting in a negative coefficient on *IDAR*.

[Insert Table 4.2 about here]

Therefore, the WW financial constraints index is constructed using the estimates from Model (2) of Table 4.2:

$$\hat{\lambda}_{it} = -0.1477SOE_{it} - 0.0654SG_{it} - 0.0508LogTA_{it} + 0.018ISG_{it} \\ -0.1287Cash_{it} - 0.0076CF_{it} - 0.3651IDAR_{it} \qquad (4.2)$$

For every firm-year observation, we sort all of the firms in our sample into deciles based on the values of their WW indices. Firms with the lowest WW index values are placed in decile one, and firms with the highest values are placed in decile ten. Following the approach in Chen, Goldstein and Jiang (2007) and Chen and Wang (2012), we assign firms to groups based on the WW decile for the financial year before the announcement of the regulation (i.e., 2008), thereby allowing us to precisely capture firms' financially constrained status before the regulation. We consider the firms in the top 3 WW index deciles to be financially constrained, while firms in the remaining deciles are considered financially unconstrained.[44]

Table 4.3 presents descriptive statistics for the full sample and the subsamples partitioned by the financial constraints index. The table shows that more than half of our sample firms pay a cash dividend during the sample period and the average payout ratio is approximately 17 percent. Note that *Regulate* has a mean value of 0.531, which suggests that our sample is balanced with respect to the number of observations before and after the regulation.

When we divide the sample into financially constrained and unconstrained firms based on the WW index, we observe significant differences in firm characteristics between the two subsamples. First, financially constrained firms have a low probability of paying cash dividends and pay less than unconstrained firms (0.535 vs. 0.703, 0.154 vs. 0.175, respectively). This is consistent with the predictions in the literature that dividend-paying firms and firms with higher payout ratios are less

[44] Our sorting scheme is analogous to that in Lamont, *et al.* (2001), except that we use the WW index instead of the KZ index. Our conclusions remain unchanged if we define financially constrained firms as those in the top 20% (as in Chen and Wang (2012)) or 40% (as in Whited and Wu (2006)) of the WW index.

likely to face financial constraints. Second, state-owned firms are less likely to be financially constrained. This is not surprising considering that state-owned-enterprises in China have better access to external financing. Third, financially constrained firms typically operate in high sales-growth industries but have low individual sales growth. They also belong to industries with low debt capacity. Finally, compared with unconstrained firms, financially constrained firms are usually smaller and have less cash flow and less analyst coverage. In sum, the firms categorized as constrained by our WW index appear to have the characteristics that the literature associates with high costs of external financing, and these patterns lend more credence to our index.

[Insert Table 4.3 about here]

4.5 The effect of financial constraints and a financing shock: Univariate analyses

Having constructed the financial constraints index and demonstrated that this index is informative of the extent to which a firm is financially constrained, we now examine whether and how financial constraints influence firms' dividend policy in the context of the 2008 regulation on financing and dividends. We begin with a univariate analysis.

Table 4.4 reports the changes in firms' dividend policy after the 2008 regulation and compares the changes between financially constrained and unconstrained firms. Panel A reports the results on the propensity to pay cash dividends and panel B reports those on the payout ratio. We find that firms are more willing to pay cash dividends after the 2008 regulation, irrespective of whether they are financially constrained. It is understandable that firms attempt to enhance their financing capacity by paying dividends when the regulation mandates dividend payment as a financing qualification. This behavior is more pronounced in financially constrained firms, as the increase in the propensity for such firms is significantly greater than that for unconstrained firms (0.120 and 0.034, respectively) and the difference between the two groups is significant at the 1% level. This finding provides support for our hypothesis *H2a* by demonstrating that firms with high costs of external financing are more eager to obtain financing eligibility. However, firms appear to reduce their dividend payout ratio after the regulation, but financially constrained firms do so to a lesser extent (the difference between the changes is highly significant). This remains consistent with our prediction that financially constrained firms attribute greater importance to financing eligibility and hence are more reluctant to cut dividends.

[Insert Table 4.4 about here]

4.6 The Effect of financial constraints and a financing shock: Cross-sectional regression analyses

The 2008 regulation represents an exogenous shock to firms' financing capacity, as it mandatorily associates dividend payment with firms' financing qualification. The deterioration in financing capacity could oblige firms to adjust their dividend policy, but firms facing higher costs of external financing may respond differently. To capture how financial constraints affect firms' dividend policy response to this financing shock in a multivariate framework, we apply a difference-in-differences approach and estimate a Logit model on firms' propensity to pay cash dividends and a Tobit model on the dividend payout ratio.

4.6.1 The effect of financial constraints and a financing shock on the propensity to pay cash dividends

Table 4.5 presents the Logit estimation results on how firms adjust their dividend-paying behavior to the 2008 regulation and how the extent of financial constraints affects this adjustment. The dependent variable is *CDPayer*, which equals one if the firm pays a cash dividend in the current financial year. We define a variable, *Constraint*, that takes a value of one if the firm's WW index is in the top 3 deciles and zero otherwise. Note that we measure *Constraint* based on the WW decile for the financial year before the 2008 regulation to ensure that we can precisely capture firms' financially constrained status before the regulation.

In Model 1, the explanatory variables are *Regulate* and *Constraint*. The coefficient on *Regulate* is significantly positive, which confirms the univariate result that the enactment of the 2008 regulation raises firms' willingness to pay. *Constraint* is associated with a negative and significant coefficient. Thus, firms facing financial constraints are less likely to pay a cash dividend, relative to firms with no constraints. This negative relationship is consistent with the evidence documented in the literature on financial constraints.

We further examine whether the existence of financial constraints is important by including an interaction term between *Regulate* and *Constraint* (i.e., *Regulate*Constraint*) in Model 2. First, *Constraint* has a negative coefficient per se; hence, before the regulation, constrained firms are less likely to pay a cash dividend than are unconstrained firms. This provides support for our hypothesis *H1a*. However, this pattern is reversed after the regulation: constrained firms now become more likely to pay than unconstrained firms, as the interaction term *Regulate*Constraint* exhibits a significantly positive coefficient. The positive coefficient on *Regulate*Constraint* further implies that financially constrained firms display a higher post-regulation increase in the propensity to pay

than unconstrained firms. These findings are consistent with the "qualified dividend" effect and suggest that when the regulation impaired firms' financing capacity, financially constrained firms engage in more dividend-paying behaviors because they face high costs of external finance and highly value their eligibility for public financing.[45] Our hypothesis *H2a* is thus also supported.

In Model 3, in addition to *Regulate*, *Constraint* and *Regulate*Constraint*, we regress *CDPayer* against a number of control variables suggested in the literature as factors affecting dividend decisions, for example, leverage (Myers (1984)), volatility (Chay and Suh (2009)) and lagged dividend status (Fama and French (2001)).[46] [47] Our results are quantitatively similar.[48] The post-regulation increase in the propensity to pay cash dividends remains larger for financially constrained firms, relative to unconstrained firms, after controlling for those potential influences. In addition, the coefficients on all of the controls are associated with the expected signs. For example, leverage is negatively related to the propensity to pay; lagged dividend status enters with a positive coefficient, confirming the view that dividends are "sticky" (Lintner (1956); Myers (1984)).

Models 4, 5 and 6 are essentially the same specifications as Models 1, 2 and 3, respectively, except that we control for the potential effects of firm-specific differences by including the firm fixed effects in the regressions. Because *Constraint* is measured as a firm-specific indicator based on the WW decile for the financial year before the 2008 regulation for each sample firm, we do not include *Constraint* as a standalone variable in the presence of firm fixed effects. The estimation results are aligned with those from the previous three models, suggesting that our results are not driven by unobservable firm-specific factors.

[Insert Table 4.5 about here]

4.6.2 The effect of financial constraints and a financing shock on the dividend payout ratio

Another important aspect of dividend policy is the cash dividend payout ratio. To verify whether the shock to financing capacity (i.e., the 2008 regulation) affects firms' payout ratio, we apply a multivariate Tobit model and report the estimation results in Table 4.6.

In Model 1, we find that firms' dividend payout ratio exhibits a decrease after the 2008 regulation, as *Regulate* is significantly negative. According to the theory of residual dividend policy, firms distribute cash only if all financing needs of its investments are met. The regulation dampens

[45] Recall that the "qualified dividend" effect predicts a post-regulation increase in firms' propensity to pay cash dividends but a greater increase for financially constrained firms. See Section 4.3.4.2 for details.
[46] For the definitions of the control variables, please refer to Table 4.1.
[47] We do not include firm size, profitability or cash holding as controls because we have already included them in the parameterization of the WW index.
[48] There are fewer observations in Model 3 because of some missing values.

the financing capacity of all firms, which forces firms to rely on internal sources of funds. Therefore, cash dividends that can be distributed decrease in the post-regulation period. Moreover, recall that the regulation requires the accumulated cash dividends be no less than 30% of annual distributable profits.[49] If the firm has already satisfied the requirement, it does not need to pay higher dividends after the regulation. Additionally, the coefficient on *Constraint* is negative and significant at the 1% level, indicating that financially constrained firms pay lower dividends than unconstrained firms, on average.

In Model 2, we add an interaction term, *Regulate*Constraint*, to capture the differential effect of the regulation on financially constrained and unconstrained firms. The coefficient on the interaction term is positive and statistically significant, while the coefficient on *Constraint* itself is negative. This finding implies that the regulation changes the relationship between financial constraints and dividend payouts. Before the regulation, financial constraints have a significantly negative impact on payout ratios (supporting hypothesis *H1b*), but this negative impact weakens in the post-regulation period. Furthermore, constrained firms respond differently from unconstrained firms when affected by the shock to financing capacity. We observe that while *Regulate* has a negative coefficient, *Regulate*Constraint* enters with a positive sign. Therefore, relative to unconstrained firms, the post-regulation reduction in cash dividends is less significant for financially constrained firms. This is consistent with the expectation of the "residual dividend" effect and supports our hypothesis *H2b*.[50]

To control for the effect of other potential explanatory variables, in Model 3, we regress *Payout* against several control variables in addition to those considered previously.[51] The results are qualitatively similar to those from Models 1 and 2 (e.g., *Regulate*Constraint* is positive and significant at the 5% level), suggesting that the effect of financial constraints persists and is not driven by other factors. Model 3 also shows that *Leverage* and *Volatility* have negative impacts on firms' dividend payout ratios, while lagged dividend status (*Lag1CDPayer*) has a positive effect, as previous studies suggest.[52]

[Insert Table 4.6 about here]

[49] The 2008 regulation stipulates that the accumulated cash dividends distributed over the past three years must be no less than 30% of the average realized annual distributable profits if listed firms intend to publicly issue new securities.
[50] Recall that the "residual dividend" effect expects a post-regulation decline in firms' cash dividend payout ratios but a smaller decrease for financially constrained firms. See Section 4.3.4.1 for details.
[51] We do not include firm fixed effects in the models, as there is not a sufficient statistic that would allow the fixed effects to be conditioned out of the likelihood and the unconditional fixed-effects estimates are biased (Honoré (1992)).
[52] The lagged dividend payout ratio is not included as a control because using lagged payout ratios as an explanatory variable is akin to regressing the dependent variable on itself (Fama and French (2001)).

To summarize, the results in Sections 4.6.1 and 4.6.2 confirm that compared with unconstrained firms, constrained firms increase their propensities to pay dividends to a greater extent and reduce their dividend payout ratios to a lesser extent after the regulation. This finding is consistent with the predictions of both the "qualified dividend" and the "residual dividend" effect that we discuss in Section 4.3.4. Furthermore, we find evidence that the two effects play different roles in firms' decisions regarding whether to pay a dividend and how much to pay. It appears that the "qualified dividend" effect dominates in firms' decisions regarding whether to pay a cash dividend because the observed post-regulation increase in firms' propensity to pay is consistent with the "qualified dividend" effect. In contrast, when firms determine how much to pay out as dividends, the "residual dividend" effect appears to dominate, as we observe a decline in the payout ratio after the regulation, exactly as the "residual dividend" effect predicts.

4.6.3 The effect of financial constraints and a financing shock: subsample analysis

To explicitly examine how financial constraints affect firms' responses to the financing shock, we compare two subsamples categorized based on their WW deciles in the financial year before the 2008 regulation. The most constrained subsample comprises those firms in the top 3 WW index deciles, while the most unconstrained subsample includes firms in the lowest 3 deciles. The comparison between the top and bottom subsamples could provide a clearer picture of the impact of financial constraints.

4.6.3.1 The propensity to pay cash dividends

Table 4.7 tabulates the Logit estimation results on the propensity to pay dividends for the two subsamples. We observe significant differences in the dividend response to the 2008 regulation between the two groups of firms. Throughout all three specifications, the coefficients on *Regulate* are positive and highly significant for firms with the tightest financial constraints, while none of them is significant for firms having no financial constraints. This result suggests that financially constrained firms become more likely to pay cash dividends after the regulation but the most unconstrained firms do not. For firms facing very high costs of external finance, the implementation of the regulation places them in a more disadvantaged position by restricting their future financing capacity. As a result, these firms are inclined to utilize dividend payments to increase their financing capacity. By contrast, for those firms with the least financial constraints, there is no incentive for them to pay dividends more frequently after the regulation, as they already possess relatively better access to external finance before the regulation. This finding corresponds to the evidence in Table 4.5 and provides further support for our hypothesis *H2a*.

[Insert Table 4.7 about here]

4.6.3.2 The dividend payout ratio

Table 4.8 compares how the dividend payout ratio responds to the regulation between the top and bottom subsamples classified by the extent of financial constraints. For the most financially constrained firms, the coefficients on *Regulate* are positive but insignificant in either Model 1 or 2, whereas the coefficients are negative and highly significant at the 1% level for the most unconstrained group. These findings reveal some interesting patterns. When the regulation dampens firms' financing capacity, financially unconstrained firms reduce their dividend payouts significantly (likely for the sake of saving more cash to meet investment needs). In stark contrast, financially constrained firms do not exhibit the same behavior; they increase their dividend payouts (albeit not significantly). The decrease in financing capacity does not depress constrained firms' demand for external funds because the opportunity costs of investments are relatively higher for constrained firms (Almeida and Campello (2010)). To maintain their financing capacity, constrained firms tend to increase (or reduce to a lesser extent) their dividend payout ratios. This confirms our results in Table 4.6 and provides direct evidence for our hypothesis *H2b*.

[Insert Table 4.8 about here]

4.7 Why do financially firms increase dividends?

In the previous sections, we demonstrate that financially constrained firms (relatively) increase dividend payments after experiencing a shock to financing capacity. As Jensen (1986) and Stephens and Weisbach (1998) note, increasing dividends can increase leverage and reduce cash, and thus corporate liquidity. If dividend-increasing firms are financially constrained prior to the increase, diminished corporate liquidity can be harmful. Then, it is natural to ask why constrained firms increase their dividends. Do they increase dividends for financing purposes? In this section, we provide possible answers to these questions by examining firms' propensity to finance in the post-regulation period between the groups of financially constrained and unconstrained firms.

We define a dummy variable, *Finance*, that equals one if the firm has conducted a public SEO or a rights issue in the current financial year and zero otherwise. Recall that the 2008 regulation establishes a minimum dividend level that firms must reach to secure eligibility for public financing. Only firms that have met this requirement can apply for public financing. To accommodate this financing qualification, for every firm year, we create a variable, *Qualified*, that takes a value of one if the firm's accumulated cash dividends distributed over the past three years is more than 30% of the average realized annual distributable profits and zero otherwise. Hence, if the value of *Qualified*

is one for a specific firm year, then the firm is eligible for public financing (in terms of the dividend requirement) in this particular year. If constrained firms increase dividends precisely to enhance their financing capacity, they will seize the opportunity of obtaining financing once they use dividend increases to satisfy the financing qualification. Therefore, we should observe an increase in constrained firms' likelihood of financing after the regulation. Constrained firms should also display a higher likelihood of financing than their unconstrained counterparts because the relatively high cost of external funds makes them more appreciative of the financing opportunity. In light of these arguments, we predict that financing activities in the post-regulation period will be concentrated in constrained firms that qualify for public financing (i.e., our hypothesis *H3*). To test this prediction, we estimate Logit regressions of *Finance* on *Regulate*, *Qualified*, *Constraint* and their interactions. The results are presented in Table 4.9.

In Model 1, *Regulate* has a negative but insignificant coefficient, suggesting that the regulation per se has little or no effect on firms' financing decisions. This is not unexpected, as the regulation does not restrict financing activities directly; rather, it imposes a restriction through the dividend requirement. The coefficient on *Constraint* is negative and highly significant at the 1% level. In keeping with evidence suggested in the previous literature, financially constrained firms are less likely to engage in public financing activities, partly because they face higher costs of external finance. *Qualified* is associated with a positive coefficient (significant at the 1% level), indicating that the probability of financing is higher among firms that qualify for public financing because they have a relative advantage in having their financing applications approved.

In Model 2, we interact *Regulate* and *Qualified* with *Constraint* (i.e., *Regulate*Qualified*Constraint*) to capture the differential effect of the regulation on financing behavior between the financially constrained and unconstrained groups. The coefficient on the interaction term is positive and highly significant. This finding can be interpreted from two perspectives. First, financially constrained firms that also qualify for financing tend to be more likely to finance publicly in the secondary market after the regulation. Second, in the post-regulation period, among all qualified firms, financially constrained firms are more inclined to finance than their unconstrained counterparts.

To explicitly examine this cross-sectional difference, we add another interaction term, *Regulate*Qualified*, in Model 3 as a comparison to Model 2. As expected, *Regulate*Qualified* does not show a significant coefficient, while the triple interaction (*Regulate*Qualified*Constraint*) remains positive and significant. In other words, among those qualified firms, financially constrained firms are particularly likely to increase their propensity to finance in the post-regulation

period. This pattern confirms our hypothesis *H3* that during the post-regulation period, financing activities are concentrated in constrained firms that are qualified. Our results also provide convincing evidence in favor of the view that the need to improve financing capacity could drive financially constrained firms to increase cash dividend payments.

Model 4 is a more general model in the sense that we include a variable, *Leverage*, as an additional regressor. Our conclusions remain unchanged after controlling for the effect of debt-financing capacity.[53] According to the pecking order theory, debt financing is preferred to equity financing (Myers (1984)). Therefore, a higher debt-financing capacity will depress the demand for equity financing, leading to a lower propensity to finance in the equity market. Our results are consistent with this theoretical prediction, as the coefficient on *Leverage* is negative (albeit not significant).

[Insert Table 4.9 about here]

4.8 Robustness check

To confirm that our results are not driven by the use of the synthetic WW financial constraints index, we re-estimate the main regressions of our empirical analyses using three firm characteristic variables suggested in prior studies as alternative measures of financial constraints. *LogTA* is the natural log of total assets; *State* is an indicator variable that equals one if the firm's ultimate controlling shareholder is a state-owned-enterprise or a government agency and zero otherwise; and *SG* is the firm's annual sales growth. The relationships between these three variables and financial constraints are well documented in the literature. For example, small firms are subject to greater financial constraints (see, Beck*, et al.* (2005)). State-owned listed firms are less likely to be financially constrained (see, Guo and Wei (2011)). Firms with lower individual sales growth tend to invest more, thereby making them more constrained (Whited and Wu (2006)).

Table 4.10 presents the Logit estimation results on the effect of the three variables on firms' propensity to pay cash dividends. Note that *LogTA*, *State* and *SG* are measured as firm-specific averages over the pre-regulation period for each sample firm, and hence that they are not included on their own in the presence of the firm fixed effects. As expected, our conclusions remain unaffected by the use of alternative measures of financial constraints. For instance, after the 2008 regulation, firms with smaller size, non-state ownership and lower sales growth appear to be more willing to pay cash dividends. This corresponds to the finding in Table 4.5 that financially constrained firms display a higher propensity to pay than unconstrained firms in the post-regulation

[53] Recall that the financing activity we discuss in this section is restricted to equity financing.

period. These results hold even after we control for other potential explanatory variables (e.g., leverage, volatility and lagged dividend status).[54]

[Insert Table 4.10 about here]

Table 4.11 reports the Tobit estimation results on the effect of firm size, state ownership, and sales growth on firms' cash dividend payout ratios. Again, our results are robust to different measures of financial constraints. During the post-regulation period, firms that are small, growing slowly, and non-state-owned tend to pay higher cash dividends than firms that are large, growing rapidly, and state-owned.[55] This is aligned with the evidence presented in Table 4.6 that financially constrained firms, relative to their unconstrained counterparts, raise their dividend payout ratios after the regulation to recover their financing capacity.

[Insert Table 4.11 about here]

4.9 Conclusion

The regulation released in 2008 mandatorily associates dividend payment with firms' financing qualification, which essentially dampens firms' public financing capacity. The exogenous nature of the regulation makes it a desirable setting for a quasi-natural experiment, whereby we are able to attenuate the potential endogeneity problem and cleanly identify the causal effect of financing capacity on dividend policy. In this context, we examine how this shock to financing capacity affects firms' dividend decisions, with a focus on financially constrained firms.

Our results show that the reduction in financing capacity (caused by the 2008 regulation) affects firms' dividend policy. Firms are more likely to pay cash dividends after the regulation, but they pay less than they did before.

Measuring financial constraints using a synthetic WW index, we observe that the relationship between financial constraints and dividend policy changes in response to the shock to financing capacity. Before the regulation, constrained firms are less willing to pay cash dividends and pay less than unconstrained firms. However, when the regulation reduces firms' financing capacity, financially constrained firms become more likely to pay cash dividends than unconstrained firms and pay more.

[54] Note that when we include all three measures in a single model (i.e., Models 4 and 5), the coefficient on *State* remains negative but is no longer significant. This is reasonable, as *LogTA* and *State* are highly correlated (e.g., large firms are normally state owned).

[55] Similar to that in Table 4.10, when we include all three variables in Model 4, the coefficient on *LogTA* loses its significance (but the sign remains negative). Again, this could arise from the high correlation between *LogTA* and *State*.

We also find that financially constrained firms display a greater post-regulation increase in the propensity to pay cash dividends than unconstrained firms. Similarly, the post-regulation reduction in dividend payout ratios is less significant for constrained firms, relative to their unconstrained counterparts. These findings suggest that financially constrained firms behave differently from unconstrained firms when affected by this shock to their financing capacity. Our results are robust to alternative measures of financial constraints.

We further examine why financially constrained firms behave differently and argue that the dividend-increasing behavior of constrained firms is driven by the need to obtain external financing. The evidence that financing activities in the post-regulation period are concentrated in qualified firms that are financially constrained confirms our conjecture.

Our findings offer some policy implications for the dividend regulation system in China. Based on our results (e.g., firms increase dividends after the regulation), the 2008 dividend regulation, to some extent, achieves certain goals of the regulator, which include, for example, the promotion of cash dividend payments and the protection of minority shareholders' interests. However, we should prudently evaluate the role of the dividend regulation in improving capital market efficiency. First, as we document, firms categorized as financially constrained are typically small firms in high-growth industries but with low individual sales growth. These firms have greater demand for funds but face relatively greater difficulties in obtaining external financing. The regulation, however, applies the same dividend criterion to constrained firms regardless of their inherent financing disadvantage. This may harm the sustainable development of these firms, as their financing capacity is further damaged by the regulation. Second, the mandatory association of dividend payments with public financing qualification is widely criticized by practitioners. They argue that the compulsory association could lead to a potential "adverse selection" problem. Some of the firms that face a considerable need for funds may be unable to finance in the secondary market because their cash flow shortage results in a failure to satisfy the dividend requirement for seeking public financing. Instead, other firms with sufficient cash flows may exploit the financing qualification to achieve the goal of misappropriation. Their common practice is to meet the requirement first (through paying a limited but qualified amount of dividends) and then conduct huge financing programs, such as SEOs or rights issues. In this way, large amounts of funds flow to these firms with relatively little or no need for external funds, which represents an inefficient allocation of resources in the capital market. Finally, as shown by our results, the increase in dividends is concentrated in financially constrained firms. This suggests that while the regulation is influential for firms experiencing difficulty in accessing external financing, there is little effect on firms with either better access to

external financing or a relatively limited demand for funds. Therefore, the regulation has limited ability to facilitate the establishment of a stable dividend policy in Chinese listed firms.

Table 4.1 Variable Definitions

The table provides definitions for all the variables that are either investigated or used as controls in our tests.

Variable	Definition
CDPayer	Indicator variable that equals one if the firm pays a cash dividend in the current financial year and zero otherwise
Payout	Cash dividends divided by EBIT
Regulate	Indicator variable that equals one if the current financial year is after the 2008 dividend regulation has been released and zero otherwise
Constraint	Indicator variable that takes a value of one if the firm's WW index is in the top 3 deciles and zero otherwise
Finance	Indicator variable that equals one if the firm has conducted a public seasoned equity offering (SEO) or a rights issue in the current financial year and zero otherwise
Qualified	Indicator variable that takes a value of one if the firm's accumulative cash dividends distributed over the past three years is more than 30% of the average realized annual distributable profits and zero otherwise
State	Indicator variable that equals to one if the firm's ultimate controlling shareholder is a state-owned-enterprise or a government agency and zero otherwise
SOE	Indicator variable that equals to one if the firm's ultimate controlling shareholder is a state-owned-enterprise and zero otherwise
LTD	Ratio of long-term debt to total assets
SG	Annual sales growth rate
LogTA	Natural logarithm of total assets
ISG	Industry sales growth rate
Cash	Ratio of cash, marketable securities and short-term investments to total assets
CF	Ratio of cash flow to total assets
NA	Number of analysts following the firm
IDAR	Industry debt to assets ratio
Leverage	Ratio of total liabilities to total assets
Volatility	Standard deviation of the return on assets (ROA) over the most recent four years including the current financial year
Lag1CDPayer	Indicator variable that equals to one if the firm paid cash dividends in the prior year and zero otherwise
MKT	Return on the market
SMB	Return on an arbitrage portfolio that is long small firms and short large firms
HML	Return on an arbitrage portfolio that is long firms with high book to market ratios and short firms with low book to market ratios

Table 4.2 Euler Equation Estimates

The table reports the estimation results of Euler equation. Calculations are based on a sample of all non-financial listed firms in the Chinese stock market during the period of 2003-2009. The Euler equation is given by equation (10) of Whited and Wu (2006). The nonlinear GMM estimation is carried out with the model in first differences with twice lagged instruments. α_i is the investment adjustment cost parameter, and μ is a mark-up. *LTD* is the ratio of the long-term debt to total assets; *SOE* is an indicator variable that equals to one if the firm's ultimate controlling shareholder is a state-owned-enterprise and zero otherwise; *SG* is the firm's annual sales growth; *LogTA* is the natural log of total assets; *ISG* is the firm's industry sales growth; *Cash* is the ratio of cash, marketable securities and short-term investments to total assets; *CF* is the ratio of cash flows to total assets; *NA* is the number of analysts following the firm; and *IDAR* is the firm's industry debt-to-assets ratio. *MKT*, *SMB* and *HML* are the Fama-French factors on market, size and book-to-market. T-statistics are reported in parentheses. The value of the J statistic and the P-value of the J-test on the model specification are reported in the last two rows.

Parameter	Expected sign	(1)	(2)
LTD	+	-0.0401 (-0.0002)	-0.0352 (-0.1777)
SOE	-	-0.1679 (-0.0002)	-0.1477 (-0.5905)
SG	-	-0.0744 (-0.0002)	-0.0654 (-1.1159)
LogTA	-	-0.0578 (-0.0002)	-0.0508*** (-13.8686)
ISG	+	0.0204 (0.0002)	0.0180 (0.6016)
Cash	-	-0.1464 (-0.0002)	-0.1287 (-0.5530)
CF	-	-0.0087 (-0.0002)	-0.0076 (-0.1236)
NA	-	0.0022 (0.0002)	0.0020 (0.2458)
IDAR	-	-0.4151 (-0.0002)	-0.3651 (-0.7807)
Constant		0.1372 (0.0000)	
μ		1.2301*** (20.8437)	1.2301*** (22.2357)
α_0		-0.3940 (-0.3708)	-0.3940 (-0.4447)
α_2		0.4983* (1.7302)	0.4983* (1.8608)
α_3		0.0117 (1.4603)	0.0117 (1.5188)
l_0		0.8675*** (6.9429)	0.8675*** (8.1986)
MKT		-0.0610 (-0.4322)	-0.0610 (-0.5335)
SMB		0.0406 (0.1705)	0.0406 (0.1707)
HML		1.7559 (1.1048)	1.7559 (1.1580)
Observations		5,272	5,272
J statistic		1.3179	1.3179
P-value		0.9707	0.9706

Table 4.3 Summary Statistics

The table reports summary statistics of key variables. All the variables are defined as in Table 1. The full sample consists of 8,758 firm-year observations during the period of 2003-2012, representing 941 non-financial listed firms in the Chinese stock market. For every year of data, we sort all the firms in the sample into deciles based on the values of their WW indices, where decile 1 represents the lowest values and decile 10 the highest. We then assign firms to groups based on the WW decile for the financial year before the announcement of the regulation (i.e., 2008). Firms in the top 3 WW index deciles are classified as financially constrained; firms in other deciles as financially unconstrained.

Variable	Full sample					Financially constrained					Financially unconstrained				
	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
CDPayer	8,752	0.654	0.476	0.000	1.000	2,549	0.535	0.499	0.000	1.000	6,203	0.703	0.457	0.000	1.000
Payout	8,740	0.169	0.196	0.000	1.053	2,548	0.154	0.211	0.000	1.053	6,192	0.175	0.189	0.000	1.053
Regulate	8,758	0.531	0.499	0.000	1.000	2,549	0.545	0.498	0.000	1.000	6,209	0.526	0.499	0.000	1.000
State	8,758	0.703	0.457	0.000	1.000	2,549	0.595	0.491	0.000	1.000	6,209	0.748	0.434	0.000	1.000
SOE	8,758	0.105	0.306	0.000	1.000	2,549	0.055	0.229	0.000	1.000	6,209	0.125	0.331	0.000	1.000
LTD	8,758	0.081	0.107	0.000	0.717	2,549	0.053	0.080	0.000	0.513	6,209	0.093	0.114	0.000	0.717
SG	8,758	0.190	0.307	-0.978	2.112	2,549	0.153	0.293	-0.736	2.100	6,209	0.205	0.311	-0.978	2.112
LogTA	8,758	21.837	1.148	19.178	27.852	2,549	20.963	0.670	19.178	24.336	6,209	22.196	1.110	19.477	27.852
ISG	8,758	0.311	0.271	0.011	2.913	2,549	0.315	0.299	0.011	2.913	6,209	0.310	0.259	0.011	2.913
Cash	8,758	0.168	0.114	0.000	0.931	2,549	0.168	0.114	0.000	0.931	6,209	0.168	0.114	0.002	0.795
CF	8,758	0.057	0.080	-0.565	0.563	2,549	0.050	0.077	-0.500	0.563	6,209	0.060	0.081	-0.565	0.430
NA	8,758	7.106	10.454	0.000	89.000	2,549	4.083	7.120	0.000	43.000	6,209	8.347	11.316	0.000	89.000
IDAR	8,758	0.129	0.031	0.033	0.180	2,549	0.124	0.035	0.033	0.180	6,209	0.132	0.028	0.033	0.180
Leverage	8,758	0.486	0.177	0.007	0.936	2,549	0.442	0.170	0.007	0.936	6,209	0.504	0.177	0.008	0.919
Volatility	8,758	0.026	0.027	0.000	0.262	2,549	0.029	0.031	0.000	0.262	6,209	0.025	0.024	0.000	0.234

Table 4.4 Changes in Dividend Policy after the 2008 Regulation

This table reports the changes in firms' dividend policy after the 2008 regulation and compares the changes between financially constrained and unconstrained firms. Panel A shows the results on the propensity to pay cash dividends and panel B on the payout ratio. We assign sample firms to groups based on the WW decile for the financial year before the 2008 regulation. Financially constrained firms are firms in the top 3 deciles of the WW index. Financially unconstrained firms are firms in other deciles. *CDPayer* is an indicator variable that equals one if the firm pays a cash dividend in the current financial year. *Payout* is defined as cash dividends divided by EBIT. The changes in *CDPayer* and *Payout* are calculated on a basis of "after" minus "before" and the difference in changes is calculated on a basis of "constrained" minus "unconstrained". T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Variable	Financially constrained		Financially unconstrained		Constrained - Unconstrained
	Before	After	Before	After	Difference in Change
Panel A: The propensity to pay cash dividends					
CDPayer	0.469***	0.589***	0.685***	0.719***	
	(32.00)	(44.63)	(80.01)	(91.42)	
Change		0.120***		0.034***	0.086***
(After-Before)		(6.08)		(2.85)	(3.89)
Observations	1,159	1,390	2,940	3,263	
Panel B: The cash dividend payout ratio					
Payout	0.168***	0.143***	0.200***	0.152***	
	(24.12)	(28.58)	(51.89)	(51.74)	
Change		-0.025***		-0.045***	0.020**
(After-Before)		(-3.00)		(-9.11)	(2.17)
Observations	1,159	1,389	2,940	3,252	

Table 4.5 Effect of Financial Constraints and a Financing Shock: Propensity to Pay Cash Dividends

The table reports Logit estimation results on the effect of financial constraints on firms' propensity to pay a cash dividend. The sample consists of 8,758 firm-year observations during the period of 2003-2012, representing 941 non-financial listed firms in the Chinese stock market. The dependent variable is *CDPayer*, which is an indicator variable that equals one if the firm pays a cash dividend in the current financial year. *Regulate* is a dummy variable that takes a value of one if the current financial year is after the 2008 dividend regulation and zero otherwise; *Constraint* is an indicator variable that takes a value of one if the firm's WW index is in the top 3 deciles and zero otherwise (*Constraint* is not included on its own in the presence of the firm fixed effects, as it is firm-specifically measured based on the WW decile for the financial year before the 2008 regulation); *Regulate*Constraint* is the interaction between *Regulate* and *Constraint*. See Table 1 for definitions of all other variables. Z-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent variable	Dependent variable: The propensity to pay cash dividends					
	(1)	(2)	(3)	(4)	(5)	(6)
Regulate	0.267***	0.162***	0.260***	0.298***	0.194***	0.335***
	(5.84)	(2.92)	(3.73)	(5.12)	(2.75)	(4.12)
Constraint	-0.732***	-0.901***	-0.781***			
	(-15.05)	(-12.69)	(-8.01)			
*Regulate*Constraint*		0.321***	0.331***		0.330***	0.347**
		(3.29)	(2.65)		(2.62)	(2.40)
Leverage			-1.803***			-4.173***
			(-10.57)			(-10.25)
Volatility			-9.954***			-8.851***
			(-8.94)			(-5.07)
Lag1CDPayer			2.170***			0.257***
			(38.17)			(3.64)
Constant	0.726***	0.779***	0.579***			
	(20.17)	(19.60)	(5.06)			
Firm fixed effect	NO	NO	NO	YES	YES	YES
Observations	8,752	8,752	7,762	6,075	6,075	5,041
Likelihood Ratio (chi2)	255.9	266.8	2,267	26.30	33.21	185
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000

Table 4.6 Effect of Financial Constraints and a Financing Shock: Dividend Payout Ratio

The table reports Tobit estimation results on the effect of financial constraints on firms' cash dividend payout ratios. The sample consists of 8,758 firm-year observations during the period of 2003-2012, representing 941 non-financial listed firms in the Chinese stock market. The dependent variable is *Payout*, defined as cash dividends divided by EBIT. *Regulate* is a dummy variable that takes a value of one if the current financial year is after the 2008 dividend regulation and zero otherwise; *Constraint* is an indicator variable that takes a value of one if the firm's WW index is in the top 3 deciles and zero otherwise (*Constraint* is firm-specifically measured based on the WW decile for the financial year before the 2008 regulation); *Regulate*Constraint* is the interaction between *Regulate* and *Constraint*. See Table 1 for definitions of all other variables. T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent variable	Dependent variable: Cash dividend payout ratio		
	(1)	(2)	(3)
Regulate	-0.032***	-0.043***	-0.020***
	(-5.17)	(-5.94)	(-2.94)
Constraint	-0.058***	-0.080***	-0.057***
	(-8.33)	(-7.77)	(-5.46)
*Regulate*Constraint*		0.041***	0.026**
		(2.94)	(1.99)
Leverage			-0.415***
			(-24.66)
Volatility			-1.153***
			(-9.59)
Lag1CDPayer			0.215***
			(32.72)
Constant	0.138***	0.144***	0.215***
	(27.88)	(27.00)	(17.91)
Observations	8,740	8,740	7,750
Likelihood Ratio (chi2)	98.54	107.2	2,070
Prob > chi2	0.000	0.000	0.000

Table 4.7 Effect of Financial Constraints and a Financing Shock: Subsample Analysis on the Propensity to Pay Cash Dividends

The table reports Logit estimation results on the effect of financial constraints on firms' propensity to pay a cash dividend for two subsamples. We assign sample firms to groups based on the WW decile for the financial year before the 2008 regulation. Firms are classified as the most financially constrained if they are in the top 3 WW index deciles. The most unconstrained firms are firms in the lowest 3 deciles. The dependent variable is *CDPayer*, which is an indicator variable that equals one if the firm pays a cash dividend in the current financial year. *Regulate* is a dummy variable that takes a value of one if the current financial year is after the 2008 dividend regulation and zero otherwise. See Table 1 for definitions of all other variables. Z-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent variable	Dependent variable: The propensity to pay cash dividends					
	Most financially constrained			Most financially unconstrained		
	(1)	(2)	(3)	(1)	(2)	(3)
Regulate	0.483***	0.589***	0.719***	0.043	0.087	0.145
	(6.02)	(5.74)	(5.77)	(0.46)	(0.74)	(1.08)
Leverage		-1.658***	-5.301***		-1.927***	-4.667***
		(-5.49)	(-7.28)		(-5.78)	(-5.84)
Volatility		-12.335***	-10.064***		-8.109***	-4.261
		(-6.34)	(-3.56)		(-3.54)	(-1.25)
Lag1CDPayer		2.009***	0.040		2.247***	0.436***
		(20.11)	(0.31)		(19.40)	(3.16)
Constant	-0.123**	-0.124		1.218***	0.929***	
	(-2.08)	(-0.70)		(18.06)	(4.14)	
Firm fixed effect	NO	NO	YES	NO	NO	YES
Observations	2,549	2,247	1,580	2,642	2,345	1,338
Likelihood Ratio (chi2)	36.54	666	97.45	0.208	477.4	52.08
Prob > chi2	0.000	0.000	0.000	0.648	0.000	0.000

Table 4.8 Effect of Financial Constraints and a Financing Shock: Subsample Analysis on the Dividend Payout Ratio

The table reports Tobit estimation results on the effect of financial constraints on firms' cash dividend payout ratios for two subsamples. We assign sample firms to groups based on the WW decile for the financial year before the 2008 regulation. Firms are classified as the most financially constrained if they are in the top 3 WW index deciles. The most unconstrained firms are firms in the lowest 3 deciles. The dependent variable is *Payout*, defined as cash dividends divided by EBIT. *Regulate* is a dummy variable that takes a value of one if the current financial year is after the 2008 dividend regulation and zero otherwise. See Table 1 for definitions of all other variables. T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent variable	Dependent variable: Cash dividend payout ratio			
	Most financially constrained		Most financially unconstrained	
	(1)	(2)	(1)	(2)
Regulate	0.007	0.017	-0.061***	-0.041***
	(0.47)	(1.17)	(-6.84)	(-4.82)
Leverage		-0.460***		-0.392***
		(-10.92)		(-16.67)
Volatility		-1.879***		-0.768***
		(-6.74)		(-4.10)
Lag1CDPayer		0.257***		0.174***
		(17.06)		(16.15)
Constant	0.027**	0.138***	0.187***	0.261***
	(2.25)	(5.31)	(28.96)	(14.92)
Observations	2,548	2,246	2,637	2,340
Likelihood Ratio (chi2)	0.220	567.2	46.22	604.8
Prob > chi2	0.639	0.000	0.000	0.000

Table 4.9 Effect of Financial Constraints on the Propensity to Finance

The table reports Logit estimation results on the effect of financial constraints on firms' propensity to finance publicly. The sample consists of 8,758 firm-year observations during the period of 2003-2012, representing 941 non-financial listed firms in the Chinese stock market. The dependent variable is *Finance*, which is an indicator variable that equals one if the firm has conducted a public seasoned equity offering (SEO) or a rights issue in the current financial year and zero otherwise. *Regulate* is a dummy variable that takes a value of one if the current financial year is after the 2008 dividend regulation and zero otherwise; *Constraint* is an indicator variable that takes a value of one if the firm's WW index is in the top 3 deciles and zero otherwise (*Constraint* is firm-specifically measured based on the WW decile for the financial year before the 2008 regulation); *Qualified* is an indicator variable that takes a value of one if the firm's accumulated cash dividends distributed over the past three years is more than 30% of the average realized annual distributable profits and zero otherwise; *Regulate*Qualified* is the interaction between *Regulate* and *Qualified*; *Regulate*Qualified*Constraint* is the interaction among *Regulate*, *Qualified* and *Constraint*. See Table 1 for definitions of all other variables. Z-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent variable	Dependent variable: The propensity to finance publicly			
	(1)	(2)	(3)	(4)
Regulate	-0.135	-0.269*	-0.329	-0.332
	(-0.92)	(-1.68)	(-0.47)	(-0.48)
Constraint	-0.827***	-1.298***	-1.297***	-1.320***
	(-4.02)	(-4.06)	(-4.06)	(-4.12)
Qualified	1.456***	1.327***	1.283**	1.254**
	(4.42)	(3.98)	(2.18)	(2.13)
*Regulate*Qualified*			0.063	0.078
			(0.09)	(0.11)
*Regulate*Qualified*Constraint*		0.954**	0.951**	0.945**
		(2.27)	(2.25)	(2.24)
Leverage				-0.399
				(-0.96)
Constant	-4.832***	-4.650***	-4.608***	-4.389***
	(-14.29)	(-13.55)	(-7.91)	(-7.03)
Observations	8,758	8,758	8,758	8,758
Likelihood Ratio (chi2)	57.89	63.17	63.18	64.10
Prob > chi2	0.000	0.000	0.000	0.000

Table 4.10 Robustness Check: Propensity to Pay Cash Dividends

The table reports the Logit estimation results on the effect of firm size, ownership nature, and sales growth, which are alternative measures of financial constraints, on firms' propensity to pay cash dividends. The sample consists of 8,758 firm-year observations during the period of 2003-2012, representing 941 non-financial listed firms in the Chinese stock market. The dependent variable is *CDPayer*, which is an indicator variable that equals one if the firm pays a cash dividend in the current financial year. *Regulate* is a dummy variable that takes a value of one if the current financial year is after the 2008 dividend regulation and zero otherwise; *LogTA* is the natural log of total assets; *State* is an indicator variable that equals to one if the firm's ultimate controlling shareholder is a state-owned-enterprise or a government agency and zero otherwise; *SG* is the firm's annual sales growth; *LogTA*, *State* and *SG* are measured as firm-specific averages over the pre-regulation years for each sample firm (for this reason, they are not included on their own in the presence of the firm fixed effects); *Regulate*LogTA* is the interaction between *Regulate* and *LogTA*; *Regulate*State* is the interaction between *Regulate* and *State*; *Regulate*SG* is the interaction between *Regulate* and *SG*. See Table 1 for definitions of all other variables. Z-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent variable	Dependent variable: The propensity to pay cash dividends				
	(1)	(2)	(3)	(4)	(5)
Regulate	6.228***	0.521***	0.693***	5.441***	6.465***
	(4.31)	(5.01)	(6.90)	(3.67)	(3.84)
LogTA	0.570***			0.525***	
	(10.20)			(9.07)	
*Regulate*LogTA*	-0.273***			-0.214***	-0.256***
	(-4.05)			(-3.05)	(-3.19)
State		0.238**		0.114	
		(2.50)		(1.13)	
*Regulate*State*		-0.262**		-0.212	-0.236
		(-2.11)		(-1.63)	(-1.56)
SG			2.878***	2.722***	
			(9.61)	(8.91)	
*Regulate*SG*			-1.605***	-1.489***	-1.699***
			(-4.33)	(-3.95)	(-3.75)
Leverage	-2.241***	-1.501***	-1.884***	-2.575***	-4.101***
	(-12.42)	(-9.04)	(-11.06)	(-13.88)	(-10.02)
Volatility	-10.399***	-9.909***	-10.328***	-10.990***	-8.988***
	(-9.26)	(-9.08)	(-9.19)	(-9.49)	(-5.11)
Lag1CDPayer	2.122***	2.240***	2.159***	2.046***	0.247***
	(37.11)	(39.80)	(37.82)	(35.32)	(3.47)
Constant	-11.624***	-0.002	-0.235**	-11.135***	
	(-9.87)	(-0.02)	(-1.98)	(-9.22)	
Firm fixed effect	NO	NO	NO	NO	YES
Observations	7,762	7,762	7,762	7,762	5,041
Likelihood Ratio (chi2)	2,329	2,180	2,304	2,446	213.9
Prob > chi2	0.000	0.000	0.000	0.000	0.000

Table 4.11 Robustness Check: Dividend Payout Ratio

The table reports the Tobit estimation results on the effect of firm size, ownership nature, and sales growth, which are alternative measures of financial constraints, on firms' cash dividend payout ratios. The sample consists of 8,758 firm-year observations during the period of 2003-2012, representing 941 non-financial listed firms in the Chinese stock market. The dependent variable is *Payout*, defined as cash dividends divided by EBIT. *Regulate* is a dummy variable that takes a value of one if the current financial year is after the 2008 dividend regulation and zero otherwise; *LogTA* is the natural log of total assets; *State* is an indicator variable that equals to one if the firm's ultimate controlling shareholder is a state-owned-enterprise or a government agency and zero otherwise; *SG* is the firm's annual sales growth; *LogTA*, *State* and *SG* are measured as firm-specific averages over the pre-regulation years for each sample firm; *Regulate*LogTA* is the interaction between *Regulate* and *LogTA*; *Regulate*State* is the interaction between *Regulate* and *State*; *Regulate*SG* is the interaction between *Regulate* and *SG*. See Table 1 for definitions of all other variables. T-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Independent variable	Dependent variable: Cash dividend payout ratio			
	(1)	(2)	(3)	(4)
Regulate	0.389***	0.026**	0.007	0.267**
	(3.03)	(2.41)	(0.71)	(2.04)
LogTA	0.039***			0.033***
	(7.98)			(6.53)
*Regulate*LogTA*	-0.019***			-0.010
	(-3.13)			(-1.64)
State		0.045***		0.033***
		(4.44)		(3.19)
*Regulate*State*		-0.057***		-0.054***
		(-4.47)		(-4.10)
SG			0.145***	0.130***
			(5.12)	(4.57)
*Regulate*SG*			-0.092***	-0.088**
			(-2.71)	(-2.55)
Leverage	-0.445***	-0.394***	-0.416***	-0.457***
	(-25.41)	(-23.76)	(-24.57)	(-25.65)
Volatility	-1.191***	-1.158***	-1.180***	-1.245***
	(-9.92)	(-9.68)	(-9.80)	(-10.28)
Lag1CDPayer	0.209***	0.221***	0.217***	0.204***
	(31.73)	(34.12)	(32.91)	(30.70)
Constant	-0.611***	0.154***	0.166***	-0.526***
	(-5.96)	(11.56)	(13.42)	(-5.07)
Observations	7,750	7,750	7,750	7,750
Likelihood Ratio (chi2)	2,112	2,050	2,059	2,153
Prob > chi2	0.000	0.000	0.000	0.000

Chapter 5 Conclusion

The effects of dividend policies are puzzling. The famous Modigliani-Miller theorem states that in an efficient market, corporate policy (such as a dividend decision) has no effect on firm value unless it changes the firm's total cash flows or expected returns. Therefore, pure accounting changes, such as stock dividends, should have no significant effect on stock prices because shareholders do not actually receive any real cash returns. However, empirical research shows that stock prices react significantly when firms make stock dividend announcements (Grinblatt*, et al.* (1984)).

Chapter two examines the announcement effects of dividends in the Chinese capital market during the period 1993-2006, with an emphasis on stock dividends. We separately investigate the cumulative abnormal returns around the announcements of cash, stock and combined dividends. Because earnings are announced concurrently with dividend decisions in China, and therefore estimates of abnormal returns could be confounded by the earnings effect, we then attempt to examine the dividend announcement effect under different earnings signals. We find a strong announcement effect of stock dividends even after controlling for concurrent earnings surprises. In contrast, pure cash dividend stocks experience no significant price run-up around the announcements. These patterns suggest a preference for stock dividends but a dislike for cash dividends among Chinese investors.

The findings in Chapter two are in contrast to what has been previously documented in more mature markets. A possible explanation for the dislike of cash dividends is that cash distributions may be interpreted as negative signals for firms, for example, a signal of weak governance. To confirm our conjecture, we further investigate the factors that could affect the cash dividend policy of Chinese listed firms in the next two chapters.

In Chapter three, we examine the effect of corporate governance and stock liquidity on corporate payout policy in the context of the split-share structure reform implemented in China in 2005. The split-share reform mandates the conversion of non-tradable shares into tradable shares. The mandatory and exogenous nature of the reform makes it a quasi-natural experiment and provides an ideal setting for our research design. The split-share structure reform facilitated an improved alignment of the interests of controlling shareholders with those of outside investors, leading to an improvement in corporate governance. Meanwhile, the reform removed a substantial trading constraint and generated a close relationship between stock liquidity and controlling shareholders' interests.

We investigate the implications of the share-reform-induced governance and liquidity improvements for corporate dividend policy in Chapter three. We find that, on average, cash dividends decrease significantly after the reform. The reduction in payouts is more pronounced for firms with higher growth rates and liquidity. Given the fundamental difference in controlling shareholders between state-controlled and privately controlled firms, the reduction in cash payouts appears to be larger in state-controlled firms. Our results are robust to different time horizons surrounding the reform.

We also investigate whether the reform affects firms' decisions to pay cash dividends in Chapter three. The result indicates that the propensity to pay cash dividends significantly decreases after the reform and the probability of initiating a cash dividend also decreases. Instead, firms are more likely to omit a cash dividend in the post-reform period. When firms choose to maintain their dividend payments after the reform, their payments tend to be lower.

Our findings from Chapter three provide evidence that the removal of the split-share structure leads to improvements in both corporate governance and stock liquidity. Moreover, we show that changes in corporate governance arrangements and stock liquidity have considerable effects on firms' dividend policy.

Another strand of research establishes a link between financing capacity and dividend policy. The underlying argument is that dividend payments could reduce potential information asymmetry and thus mitigate financing costs, especially in countries with weak legal protections for minority shareholders.

Chapter four investigates how a shock to financing capacity affects listed firms' dividend decisions in China. In 2008, the CSRC released a regulation on financing qualification, in which financing eligibility is associated with a certain amount of dividend payments. The regulation essentially dampens firms' financing capacity but without having a universal impact on dividend policy per se because it is applicable only if the firm is seeking public financing. In this regard, the regulation represents an exogenous shock to firms' financing capacity, and by exploiting this shock we are able to clearly identify the causal effect of financing capacity on dividend policy.

In particular, our sample firms are categorized into financially constrained and unconstrained groups using a synthetic Whited-Wu financial constraints index. We emphasize financially constrained firms because the relatively high costs of external financing force these firms to attribute greater importance to financing eligibility. Consequently, the impact of the regulation is expected to be more pronounced among financially constrained firms.

Consistent with our expectation, we observe that when affected by a shock to financing capacity (i.e., the 2008 regulation), financially constrained firms behave differently from they did before the regulation. Before the regulation, constrained firms, on average, appear to have a lower desire to pay cash dividends than unconstrained firms; when they do pay, they tend to pay lower dividends. The shock to financing capacity, however, changes this pattern. Financially constrained firms now become more willing to pay cash dividends than unconstrained firms and pay higher dividends in relative terms. Furthermore, although after the regulation, both financially constrained and unconstrained firms exhibit a greater propensity to pay cash dividends than before, the increase in this likelihood is much more significant in constrained firms than that in unconstrained firms. Constrained firms also display a smaller post-regulation reduction in cash dividend payout ratios, relative to unconstrained firms.

More important, we provide a possible answer to the question of why financially constrained firms increase dividends in Chapter four. We demonstrate that the need to improve financing capacity is a potential motivation for such behavior by showing that financially constrained firms significantly increase their propensity to publicly finance in the post-regulation period when they utilize dividends to obtain financing eligibility.

Our findings in Chapter four shed some light on the dividend regulation system in China. Our evidence suggests that the 2008 dividend regulation, to some extent, achieves the regulator's goals, which include, for example, the promotion of cash dividend payments and the protection of shareholders' interests. However, the compulsory association of dividend payments with public financing qualification may also entail problems. For example, it may harm the sustainable development of financially constrained firms, as their financing capacity is further damaged. This association could also lead to a potential "adverse selection" problem because external capital may flow to firms that possess sufficient cash flows but have little or no need for funds. The dividend requirement of the financing regulation thus provides such firms with a legal pathway to misappropriation. The phenomenon of huge financing programs following limited dividend payments observed in the Chinese capital market may be a manifestation of such misappropriation. Moreover, our results suggest that the increase in dividends is concentrated in financially constrained firms, rather than unconstrained firms. Therefore, the regulation has limited ability to facilitate the establishment of a stable dividend policy in Chinese listed firms.

Bibliography

Almeida, Heitor, and Murillo Campello, 2010, Financing frictions and the substitution between internal and external funds, *Journal of Financial and Quantitative Analysis* 45(3), 589-622.

Almeida, Heitor, Murillo Campello, and Michael S Weisbach, 2004, The cash flow sensitivity of cash, *Journal of Finance* 59(4), 1777-1804.

Alti, Aydoğan, 2003, How sensitive is investment to cash flow when financing is frictionless?, *Journal of Finance* 58(2), 707-722.

Amihud, Yakov, and Haim Mendelson, 1986, Asset pricing and the bid-ask spread, *Journal of Financial Economics* 17(2), 223-249.

Bai, Chongen, Qiao Liu, Joe Lu, Ming Song, and Junxi Zhang, 2005, An empirical study on Chinese listed firms' corporate governance, *Economic Research Journal (in Chinese)* 2(005), 2.

Baker, Malcolm, and Jeffrey Wurgler, 2004, A catering theory of dividends, *Journal of Finance* 59(3), 1125-1165.

Banerjee, Suman, Vladimir A Gatchev, and Paul A Spindt, 2007, Stock market liquidity and firm dividend policy, *Journal of Financial and Quantitative Analysis* 42(2), 369-397.

Bayless, Mark, and Susan Chaplinsky, 1996, Is there a window of opportunity for seasoned equity issuance?, *Journal of Finance* 51(1), 253-278.

Beck, Thorsten, ASLI Demirgüç-Kunt, and Vojislav Maksimovic, 2005, Financial and legal constraints to growth: does firm size matter?, *Journal of Finance* 60(1), 137-177.

Benartzi, Shlomo, Roni Michaely, and Richard Thaler, 1997, Do changes in dividends signal the future or the past?, *Journal of Finance* 52(3), 1007-1034.

Bhattacharya, Sudipto, 1979, Imperfect information, dividend policy, and "the bird in the hand" fallacy, *Bell Journal of Economics* 10(1), 259-270.

Booth, Laurence, and Bin Chang, 2011, Information asymmetry, dividend status, and seo announcement-day returns, *Journal of Financial Research* 34(1), 155-177.

Brav, Alon, John R Graham, Campbell R Harvey, and Roni Michaely, 2005, Payout policy in the 21st century, *Journal of financial economics* 77(3), 483-527.

Bushman, Robert M, Abbie J Smith, and Frank Zhang, 2011, Investment cash flow sensitivities really reflect related investment decisions, Working paper, Available at SSRN 842085.

Calomiris, Charles W, and R Glenn Hubbard, 1994, Tax policy, internal finance and investment: Evidence from the undistributed profits tax of 1936-1937, *Journal of Business* 68, 443-482.

Campello, Murillo, 2003, Capital structure and product markets interactions: evidence from business cycles, *Journal of Financial Economics* 68(3), 353-378.

Campello, Murillo, and Long Chen, 2010, Are financial constraints priced? Evidence from firm fundamentals and stock returns, *Journal of Money, Credit and Banking* 42(6), 1185-1198.

Campello, Murillo, Rafael P Ribas, and Albert Wang, 2010, Is the stock market just a side-show? Evidence from the split-share reform in China, Working Paper, Cornell University.

Chay, Jong-Bom, and Jungwon Suh, 2009, Payout policy and cash-flow uncertainty, *Journal of Financial Economics* 93(1), 88-107.

Chen, Gongmeng, Michael Firth, and Ning Gao, 2002, The information content of concurrently announced earnings, cash dividends, and stock dividends: An investigation of the Chinese stock market, *Journal of International Financial Management and Accounting* 13(2), 101-124.

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

Chen, Langnan, and Zhengchun Yao, 2000, Empirical research on the signalling effect of dividend policy in China, *Journal of Financial Research (in Chinese)* (10), 69-77.

Chen, Qi, Xiao Chen, Katherine Schipper, Yongxin Xu, and Jian Xue, 2012, The sensitivity of corporate cash holdings to corporate governance, *Review of Financial Studies* 25(12), 3610-3644.

Chen, Qi, Itay Goldstein, and Wei Jiang, 2007, Price informativeness and investment sensitivity to stock price, *Review of Financial Studies* 20(3), 619-650.

Chen, Sheng-Syan, and Yanzhi Wang, 2012, Financial constraints and share repurchases, *Journal of Financial Economics* 105(2), 311-331.

Chen, Xiaoyue, and Xiaodong Xu, 2001, Equity structure, firm performance and the protection of investors' interest, *Economic Research Journal (in Chinese)* 11(3), 11.

Chevalier, Judith A, and David S Scharfstein, 1994, Capital market imperfections and countercyclical markups: Theory and evidence, *American Economic Review* 86, 703-725.

Conroy, Robert M, and Robert S Harris, 1999, Stock splits and information: The role of share price, *Financial Management*, 28-40.

DeAngelo, Harry, Linda DeAngelo, and René M Stulz, 2006, Dividend policy and the earned/contributed capital mix: a test of the life-cycle theory, *Journal of Financial Economics* 81(2), 227-254.

Denis, David J, and Valeriy Sibilkov, 2010, Financial constraints, investment, and the value of cash holdings, *Review of Financial Studies* 23, 247-269.

Deshmukh, Sanjay, 2005, The effect of asymmetric information on dividend policy, *Quarterly Journal of Business and Economics*, 107-127.

Dong, Ming, Chris Robinson, and Chris Veld, 2005, Why individual investors want dividends, *Journal of Corporate Finance* 12(1), 121-158.

Easterbrook, Frank H, 1984, Two agency-cost explanations of dividends, *The American Economic Review* 74(4), 650-659.

Erickson, Timothy, and Toni M Whited, 2000, Measurement error and the relationship between investment and Q, *Journal of Political Economy* 108(5), 1027-1057.

Fama, Eugene F, and Kenneth R French, 2001, Disappearing dividends: changing firm characteristics or lower propensity to pay?, *Journal of Financial Economics* 60(1), 3-43.

Fazzari, Steven, R Glenn Hubbard, and Bruce C Petersen, 1988, Financing constraints and corporate investment, *Brooking Papers on Economic Activity* 1, 141-195.

Gao, Jun, 2009, Study on the cash dividend policy of state-owned listed companies around the ownership reform, *Communication of Finance and Accounting (in Chinese)* 27(9), 20-22.

Gilchrist, Simon, and Charles P Himmelberg, 1995, Evidence on the role of cash flow for investment, *Journal of Monetary Economics* 36(3), 541-572.

Gill, Amarjit, Nahum Biger, and Rajendra Tibrewala, 2010, Determinants of dividend payout ratios: Evidence from United States, *The Open Business Journal* 3, 8-14.

Gomes, Joao F, Amir Yaron, and Lu Zhang, 2006, Asset pricing implications of firms' financing constraints, *Review of Financial Studies* 19(4), 1321-1356.

Gompers, Paul, Joy Ishii, and Andrew Metrick, 2003, Corporate governance and equity prices, *The Quarterly Journal of Economics* 118(1), 107-156.

Grinblatt, Mark S, Ronald W Masulis, and Sheridan Titman, 1984, The valuation effects of stock splits and stock dividends, *Journal of Financial Economics* 13(4), 461-490.

Grossman, Sanford J, and Oliver D Hart, 1980, Takeover bids, the free-rider problem, and the theory of the corporation, *The Bell Journal of Economics* 11(1), 42-64.

Grullon, Gustavo, Roni Michaely, and Bhaskaran Swaminathan, 2002, Are Dividend Changes a Sign of Firm Maturity?, *Journal of Business* 75(3), 387-424.

Guo, Lihong, and Wenjie Ma, 2009, The re-examination of financial constraints and investment-cash flow sensitivity: evidence from Chinese listed firms, *Journal of World Economy (in Chinese)* (2), 77-87.

Guo, Muxuan, and Shibo Wei, 2011, Financing constraints, refinancing ability and cash dividends, *Contemporary Finance and Economics* (8), 119-128.

Han, Zhongxue, and Tingting Zhou, 2011, Product market competition, financing constraints and cash holdings: an empirical study based on listed companies in China's manufacture industry, *Nankai Business Review (in Chinese)* (4), 149-160.

Hennessy, Christopher A, and Toni M Whited, 2007, How costly is external financing? Evidence from a structural estimation, *Journal of Finance* 62(4), 1705-1745.

Honoré, Bo E, 1992, Trimmed LAD and least squares estimation of truncated and censored regression models with fixed effects, *Econometrica: Journal of the Econometric Society*, 533-565.

Hoshi, Takeo, Anil Kashyap, and David Scharfstein, 1991, Corporate structure, liquidity, and investment: Evidence from Japanese industrial groups, *Quarterly Journal of Economics*, 33-60.

Howe, John S, and Ji-Chai Lin, 1992, Dividend policy and the bid-ask spread: An empirical analysis, *Journal of Financial Research* 15(1), 1-10.

Hu, Guoliu, and Jinggui Huang, 2005, The relationship between ownership structure and corporate dividend policy choice: a theoretical and empirical study, *Business Economics and Administration (in Chinese)* 170(12), 3-8.

Huang, Juan Juan, Yifeng Shen, and Qian Sun, 2011, Nonnegotiable shares, controlling shareholders, and dividend payments in China, *Journal of Corporate Finance* 17(1), 122-133.

Huang, Lei, Ming Li, and Yong Ye, 2012, Research on distribution policy of cash dividends in listed companies, *Soft Science (in Chinese)* 26(7), 118-122.

Huang, Shaoan, and Gang Zhang, 2001, The analysis of the equity financing preference of Chinese listed firms, *Economic Research Journal (in Chinese)* 11(1), 77-83.

Igan, Deniz, Aureo de Paula, and Marcelo Pinheiro, 2010, Liquidity and dividend policy, *MPRA Paper* No. 29409.

Jensen, Michael C, 1986, Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review* 76(2), 323-329.

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

Jin, Qinglu, and Hongqi Yuan, 2008, Corporate governance and the determinants of the compensation ratio in the splitting-share reform, *China Economic Quarterly (in Chinese)* 8(1), 249-270.

John, Kose, and Joseph Williams, 1985, Dividends, dilution, and taxes: A signalling equilibrium, *Journal of Finance* 40(4), 1053-1070.

Kane, Alex, Young Ki Lee, and Alan Marcus, 1984, Earnings and dividend announcements: Is there a corroboration effect?, *Journal of Finance* 39(4), 1091-1099.

Kaplan, Steven N, and Luigi Zingales, 1997, Do investment-cash flow sensitivities provide useful measures of financing constraints?, *Quarterly Journal of Economics* 112(1), 169-215.

Kaplan, Steven N, and Luigi Zingales, 2000, Investment-cash flow sensitivities are not valid measures of financing constraints, *Quarterly Journal of Economics* 115, 707-712.

Khang, Kenneth, and Tao-Hsien Dolly King, 2006, Does dividend policy relate to cross-sectional variation in information asymmetry? Evidence from returns to insider trades, *Financial Management* 35(4), 71-94.

Korajczyk, Robert A, Deborah J Lucas, and Robert L McDonald, 1991, The effect of information releases on the pricing and timing of equity issues, *Review of Financial Studies* 4(4), 685-708.

Kornai, Janos, 1998, The place of the soft budget constraint syndrome in economic theory, *Journal of Comparative Economics* 26(1), 11-17.

La Porta, Rafael, Florencio Lopez de Silanes, Robert Vishny, and Andrei Shleifer, 2000, Agency problems and dividend policies around the world, *Journal of Finance* 60(1), 1-33.

Lamont, Owen, 1997, Cash flow and investment: Evidence from internal capital markets, *Journal of Finance* 52(1), 83-109.

Lamont, Owen, Christopher Polk, and Jesus Saa-Requejo, 2001, Financial constraints and stock returns, *Review of Financial Studies* 14(2), 529-554.

Lee, Chi-Wen, and Xing Xiao, 2004, Tunneling dividends, *Available at SSRN 693361*.

Li, Kai, and Xinlei Zhao, 2008, Asymmetric information and dividend policy, *Financial Management* 37(4), 673-694.

Li, Li, Manshu Wang, and Yinfeng Qi, 2006, The determinants and motivations of dividend policy - Evidence from the survey of Chinese non-state listed firms, *Journal of Financial Research (in Chinese)* (1), 74-85.

Lian, Yujun, and Jian Cheng, 2007, Investment-cash flow sensitivity: financial constraints or agency costs?, *Journal of Finance and Economics (in Chinese)* 33(2), 37-46.

Liao, Li, and Fang Fang, 2005, The agency theory of dividend policy: An empirical analysis, *Nankai Business Review (in Chinese)* 8(5), 55-62.

Lin, Justin Yifu, Fang Cai, and Zhou Li, 1998, Competition, policy burdens, and state-owned enterprise reform, *The American Economic Review* 88(2), 422-427.

Lintner, John, 1956, Distribution of incomes of corporations among dividends, retained earnings, and taxes, *American Economic Review* 46, 97-113.

Lv, Changjiang, and Xianhua Zhou, 2005, Corporate governance and payout incentive - based on agency cost and tunneling, *Nankai Business Review (in Chinese)* 8(3), 9-17.

Ma, Shuguang, Zhizhong Huang, and Yunkui Xue, 2005, Resource predation under deferent controlling shareholder and cash dividend policy, *Accounting Research (in Chinese)* (9), 44-50.

Masters, Nicholas, Robert W Faff, and Shams Pathan, 2013, Financial constraints and dividend policy, Working paper, Available at SSRN 2286962.

Michaely, Roni, and Michael R Roberts, 2012, Corporate dividend policies: Lessons from private firms, *Review of Financial Studies* 25(3), 711-746.

Michaely, Roni, Richard H Thaler, and Kent L Womack, 1995, Price reactions to dividend initiations and omissions: overreaction or drift?, *Journal of Finance* 50(2), 573-608.
Miller, Merton H, and Franco Modigliani, 1961, Dividend policy, growth, and the valuation of shares, *The Journal of Business* 34(4), 411-433.
Miller, Merton H, and Kevin Rock, 1985, Dividend policy under asymmetric information, *Journal of Finance* 40(4), 1031-1051.
Mitton, Todd, 2004, Corporate governance and dividend policy in emerging markets, *Emerging Markets Review* 5(4), 409-426.
Modigliani, Franco, and Merton H Miller, 1958, The cost of capital, corporation finance and the theory of investment, *American Economic Review*, 261-297.
Myers, Stewart C, 1984, The capital structure puzzle, *Journal of Finance* 39(3), 574-592.
Myers, Stewart C, and Nicholas S Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13(2), 187-221.
Opler, Tim, Lee Pinkowitz, René Stulz, and Rohan Williamson, 1999, The determinants and implications of corporate cash holdings, *Journal of Financial Economics* 52(1), 3-46.
Preinreich, Gabriel AD, 1932, Stock yields, stock dividends and inflation, *Accounting Review*, 273-289.
Qian, Yingyi, 1994, A theory of shortage in socialist economies based on the "soft budget constraint", *American Economic Review* 84(1), 145-156.
Sage, George H, 1937, Dividend Policy and Business Contingencies, *Harvard Business Review* 15(2), 245-252.
Shao, Zhenglin, and Yungang Lin, 2004, A study on dividend policy of listed firms, *Market Weekly* (3), 45-47.
Sheshinski, Eytan, and Luis F López-Calva, 2003, Privatization and its benefits: theory and evidence, *CESifo Economic Studies* 49(3), 429-459.
Shleifer, Andrei, 1998, State versus private ownership, *Journal of Economic Perspective* 12(4), 133-150.
Shleifer, Andrei, and Robert W Vishny, 1997, A survey of corporate governance, *The Journal of Finance* 52(2), 737-783.
Song, Yu, and Zhuo Li, 2007, Ultimate control person's characteristics and cash dividend policy, *Audit and Economy Research (in Chinese)* 22(5), 106-112.
Stephens, Clifford P, and Michael S Weisbach, 1998, Actual share reacquisitions in open - market repurchase programs, *Journal of Finance* 53(1), 313-333.
Tang, Qingquan, and Danglun Luo, 2006, Cash dividends and the tunneling of controlling shareholders: Empirical evidence from Chinese listed firms, *Finance and Trade Research (in Chinese)* (1), 92-97.
Tang, Yuejun, and Rengming Xie, 2006, Balance Mechanism of Blockholder and Tunneling of Cash Dividend: Evidences from Chinese Listed companies from 1999 to 2003, *Nankai Economic Studies (in Chinese)* (1), 60-78.
Tian, Lihui, 2005, State-owned property rights, soft budget constraints and leverage-based governance in Chinese listed firms, *Management World* 7(4), 26-37.
Twite, Garry, Jing Shi, Xi He, and Mingsheng Li, 2012, Stock Versus Cash Dividends: Signalling or Catering, Working Paper, Australian National University.
Wang, Huacheng, Chunling Li, and Chuang Lu, 2007, A case study of the impact of controlling shareholders on the listed companies' cash dividend policies, *Management World (in Chinese)* (1), 122-127.
Wei, Feng, and Xing Liu, 2004, The effect of financial constraints and uncertainty on corporate investment, *Economic Science (in Chinese)* (2), 35-43.
Wei, Gang, 1998, Empirical research on dividend payments of Chinese listed companies, *Economic Research Journal (in Chinese)* (6), 30-36.
Wei, Gang, and Yihong Jiang, 2001, The survey report of Chinese listed firms' dividend policy, *Economic Science (in Chinese)* (4), 79-87.
Wei, Gang, and Jason Zezhong Xiao, 2009, Equity ownership segregation, shareholder preferences, and dividend policy in China, *The British accounting review* 41(3), 169-183.
Whited, Toni M, 1992, Debt, liquidity constraints, and corporate investment: Evidence from panel data, *Journal of Finance* 47(4), 1425-1460.
Whited, Toni M, and Guojun Wu, 2006, Financial constraints risk, *Review of Financial Studies* 19(2), 531-559.

Wu, Xiaoling, and Minglei Zhai, 2013, Empirical study on influence of ownership structure on dividend policy - based on ownership structure changes after equity division reform, *Journal of Shanxi Finance and Economics University (in Chinese)* 35(1), 84-94.

Xie, Weimin, and Hongxing Fang, 2011, Financial development, financing constrains and firms' R&D investment, *Journal of Financial Research (in Chinese)* (5), 171-183.

Xin, Yu, and Liping Xu, 2007, Governance environments and consideration in share reform: An investor protection perspective, *Economic Research Journal (in Chinese)* (9), 121-133.

Xiong, Wei, and Jialin Yu, 2011, The Chinese warrants bubble, *American Economic Review* 101, 2723-2753.

Xu, Liping, Yu Xin, and Gongmeng Chen, 2006, The types of controlling shareholders and the performance for China's listed companies, *The Journal of World Economy (in Chinese)* (10), 78-83.

Yan, Daying, 2004, An empirical study on the effect of controlling shareholders' propensity on dividend policy in Chinese listed firms, *Nankai Economic Studies (in Chinese)* (6), 94-100.

Yan, Rongping, and Guilan Wang, 2011, The study of corporate cash holding policy based on financial constraints, *Communication of Finance and Accounting* (1), 120-122.

Yu, Jing, Gongmeng Chen, and Bin Sun, 2010, The influence of non-tradable share reform on looting effect of cash dividend, *Soft Science (in Chinese)* 24(8), 24-29.

Yu, Qian, and Ying Cheng, 2001, Firm's dividend policy and stock market fluctuation in China, *Economic Research Journal (in Chinese)* 4, 32-40.

Yuan, Hongqi, 2001, Analysis on the dividend policy of listed companies in China, *The Study of Finance and Economics (in Chinese)* 27(3), 33-41.

Zhang, Chuanming, and Zhi Xu, 2006, An empirical study on the effect of different ownership structure on dividend policy: Evidence from Chinese listed companies, *Research on Economics and Management (in Chinese)* (12), 70-76.

Zhang, Chun, and Wei Lv, 2007, Information disclosure, analyst following and financial constraints, *Accounting Research (in Chinese)* (11), 32-38.

Zhang, Yifan, Zhi Yang, Yue Ma, and Yasheng Huang, 2012, A fire sale without fire: an explanation of labor-intensive FDI in China, Sloan Working Papers.

Zheng, Zhigang, Yanmei Sun, Songtao Tan, and Dezeng Jiang, 2007, Consideration determination in the split-share structure reform and the examination of the effectiveness of corporate governance mechanisms in China's listed companies, *Economic Research Journal (in Chinese)* (7), 96-109.

Zhong, Yong, and Xianwei Lu, 2013, Financing constraints, agent cost and information content of cash dividend policy, *Soft Science (in Chinese)* 27(12), 140-144.