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# Institutional stock ownership and corporate dividend policy : evidence from China

Jianghua SHEN

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INSTITUTIONAL STOCK OWNERSHIP AND CORPORATE DIVIDEND  
POLICY: EVIDENCE FROM CHINA

by

SHEN Jianghua

A thesis

submitted in partial fulfillment  
of the requirements for the Degree of  
Master of Philosophy in Business  
(Finance & Insurance)

Lingnan University

2013

## ABSTRACT

Institutional Stock Ownership and Corporate Dividend Policy:  
Evidence from China

by

SHEN Jianghua

Master of Philosophy

Agency theory suggests that institutional stockholders are able to influence the dividend policies of listed firms with the underlying objective of reducing a firm's agency costs. This study explores the causal effects of institutional ownership on dividend policies for the firms listed in China. Using various measures of institutional ownership and dividend policy, I find that mutual fund ownership in a firm causes it to pay out more cash dividends or to initiate cash dividends. These effects are mainly evident in the firms controlled by the state and regional governments and those with relatively high free cash flows. The effects are also shown to be stronger when the mutual fund investment horizon is longer. However, firms with existing high levels of cash dividends do not attract mutual fund investors. The results still hold when I use different methods to mitigate the endogeneity problem. Mutual fund ownership is also shown to reduce agency costs and improve the operating performances of the firms that they invest in. Other institutional investors, such as banks, insurance companies, and securities companies appear to have different influences from those of mutual funds on firms' cash dividend payments, agency costs and operating performances. My results support the agency costs explanation of institutional ownership and dividend policy.

## DECLARATION

I declare that this is an original work based primarily on my own research, and I warrant that all citations of previous research, published or unpublished, have been duly acknowledged.

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( SHEN Jianghua )

May 8, 2013

CERTIFICATE OF APPROVAL OF THESIS

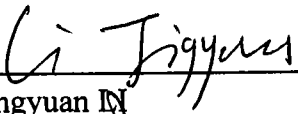
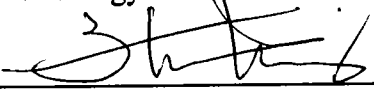
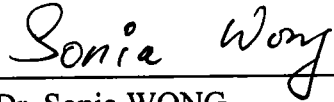
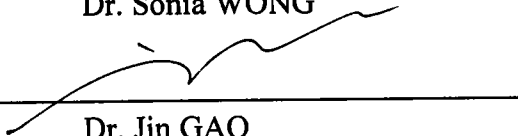
INSTITUTIONAL STOCK OWNERSHIP AND CORPORATE DIVIDEND POLICY:  
EVIDENCE FROM CHINA

by

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Master of Philosophy

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# **Institutional Stock Ownership and Corporate Dividend Policy:**

## **Evidence from China**

### **Chapter 1. Introduction**

The governance effects of institutional investors have been widely studied. Most literature focuses on whether institutional ownership can affect firm value and specific aspects of corporate governance (e.g., Chen et al., 2007; Yuan et al., 2008; Ferreira and Matos, 2008; Ferreira et al., 2010; Aggarwal et al., 2011), while the monitoring roles of institutional investors on corporate financial policies and decisions are relatively under-investigated, especially in emerging markets.

In this study, I examine the role of institutional investors in influencing one of firm's major policy decisions, namely cash dividend payouts, in China. Higher cash dividends can reduce a firm's agency costs and impose more discipline on the directors. For example, dividends reduce a firm's free cash flow that might otherwise be squandered on management perquisites or otherwise wasted (Jensen, 1986). Furthermore, higher dividends reduce managers' abilities to finance new investments from internal resources. Instead, managers have to turn to external sources of funds to finance their expansion plans and this exposes them to market scrutiny (Rozeff, 1982; Easterbrook, 1984). Although market scrutiny is costly, it may help prevent overinvestment in projects with negative net present values. Left to their own devices, managers might not want to pay out high dividends as this reduces their discretionary spending. Active institutional shareholders thus may play an important role by insisting on dividend payments for the firms they invest in (Eckbo and Verma, 1994).

Small investors, on the other hand, are unlikely to be able to exert much influence on a firm's top management. Therefore, a positive relation between institutional investors and dividend payouts are expected. I derive implications of the agency cost theory and extend the extant literature by examining how institutional investors influence dividend policies of firms listed in China.

The prior literature on the empirical relations between institutional ownership and firms' dividend payments have generated mixed results. Short et al. (2002) find that in the U.K., institutional ownership can enhance the contemporary and positive relation between earnings and dividends while managerial ownership weakens the relation. Using U.S. data, Grinstein and Michaely (2005) show that although institutions avoid investing in firms that do not pay any dividends, they neither prefer investing in firms with higher dividends nor appear to influence firms in which they have invested to increase dividends. Motivated by tax consideration arguments, Hotchkiss and Lawrence (2007) and Desai and Jin (2011) find that institutional investors that serve taxable clients are less likely to increase their stock holdings in firms with high dividend payments, and that firms with these tax-averse institutional investors tend to reduce dividend payments. These research studies mostly examine the investment preferences of mutual funds and other institutional investors (i.e., whether higher dividends can attract institutional investments), but draw few or insignificant conclusions about whether institutional investors can influence dividend policies, as predicted by agency theory.

My study extends the prior literature by investigating whether Chinese institutional investors have an influence on the dividend payouts of firms in which they invest. Different from the results found for U.S. firms by Grinstein and Michaely (2005), I find a positive effect, which is consistent with the agency theory and the

monitoring roles of institutional investors. China is an interesting setting for my research because of the government's influence over the listed firms, a feature which is far more pervasive than in the major developed markets of the U.S. and Europe. Moreover, the individual investors have limited abilities to monitor firms due to the weak shareholder protection in the country and higher information asymmetry. Thus, institutional investors in China have a potentially important role to play in monitoring firms and have different incentives than their counterparts in the developed market economies.

The major institutional investors in China are banks, securities companies, insurance companies, pension funds, and open-end mutual funds. Of these, mutual funds stand apart because of the intense competition among funds in the industry and the short term investment horizons of the retail investors they serve. Mutual funds have to fight hard to gain new unit holders and retain existing customers, and they achieve this primarily through the performance of their funds. In order to improve their own financial performance, mutual funds seek out what they believe are under-valued firms and put pressure on them to maximize profits (Yuan et al., 2008) and reduce agency costs. In contrast, banks, securities companies, insurance companies, and pension funds have captive investors and short term (and even long term) financial performance is less critical for them. Furthermore, these institutions are often controlled by, or are heavily influenced by central government and they are as much concerned about promoting government economic policies as they are about maximizing the efficiency of the firms they invest in. Moreover, these institutions often have business dealings with the listed firms where they have share ownerships and this may impinge on their efficiency. Based on this understanding of the incentives facing the different institutional investors, I argue that mutual funds will be the most

proactive in influencing firms' dividend policies.

This study examines the relation between institutional stock holdings and cash dividends in China during the period 2003-2011. I distinguish between the relatively more independent institutional investors, domestic mutual funds, and other institutions that might have business relations with the listed firms, including banks, insurance companies, and securities companies (hereafter BIS). I capture the dividend policies of listed firms using both the decision to pay dividends and the dividend amount. My regression results show that mutual fund ownership leads firms to pay cash dividends or to increase cash dividends if the firms already pay dividends, while the BIS do not. I find that the positive effects of mutual funds on dividend payments are mainly driven by state owned enterprises (SOEs<sup>1</sup>) and firms with relatively high free cash flows. SOEs tend to have higher agency costs due to the obsolete state assets management system (Mi and Wang, 2000) and it is for these firms that the mutual funds have the greatest incentives to influence dividend policy. The positive effects for SOEs are stronger when the investment horizons of mutual funds are longer. My results indicate that mutual funds in China play a positive role in the dividend policies of the firms that have potentially higher agency costs. Therefore, I provide evidence consistent with the monitoring hypothesis of financial institutions and the agency theory relating dividends, agency costs and institutional ownership.

The regression analysis on the relations between institutional ownership and dividend policies are subject to potential endogeneity problems. First, the institutional ownership and cash dividends may both be endogenously determined by some omitted (unobservable) firm-specific variables. Second, institutional investors instead of

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<sup>1</sup>SOEs are defined as firms whose ultimate controlling shareholder is the central government, local government or government agency, zero otherwise. The ultimate controlling shareholders of listed firms are obtained from the CSMAR database.

forcing management to issue more cash dividends could choose to invest in firms that already have high dividend payments. To deal with the potential endogeneity problems arising from omitted variables, firm fixed-effect regressions with all independent variables lagged one year are used. I also use the changes in variables, i.e., regressing the change in cash dividend payment from time  $t-1$  to  $t$  against the change in institutional ownership from time  $t-2$  to  $t-1$ , and find positive and significant estimated coefficients. In order to test whether the institutional investors choose to invest in firms that already have higher cash dividends, I transpose the main independent and dependent variables and regress the changes in institutional ownership from time  $t-1$  to  $t$  against the changes in dividend payments from time  $t-2$  to  $t-1$ . My results indicate that the causation runs from institutional ownership to dividends, not the other way around. I also use two-stage instrumental variable regressions to further deal with the endogeneity problem and find consistent results.

Agency theory states that institutions, acting as monitors of managers, should put pressure on firms to increase dividend payments and thereby reduce the agency costs caused by superfluous free cash flows. I examine this by testing directly whether institutions do reduce firms' agency costs and improve firm performance. Controlling for a list of financial indicators and corporate governance controls, mutual funds as shareholders are significantly and positively related to firm performance and are significantly and negatively related to agency costs. The BIS institutions do not seem to be associated with lower agency costs or higher firm performance.

My research contributes to the literature in the following respects. First, different from previous literature, the empirical evidence from my thesis suggests that mutual fund ownership causes a firm's dividend policy to change. Specifically, mutual fund investors can increase the cash dividends of the firms that they invest in; nevertheless,

high cash dividends do not attract mutual fund investors. Short et al. (2002) shows a positive and contemporary relation between institutional investors and dividend payments in the U.K., but does not indicate any causality effect. Desai and Jin (2011) find institutional ownership and dividend policy can influence each other mutually. The findings of Grinstein and Michaely (2005) support neither the models predicting that high dividends attract institutional clientele nor the models suggesting that institutions cause firms to increase payments. The potential endogeneity problem is examined by using the firm-fixed effects models, changes of lagged variables method, reverse regression analysis and instrumental variable estimation. I also find that high cash dividends payment can attract banks, insurance companies and securities companies, but these institutions do not have consistently positive effects on the dividend policy.

Second, prior literature provides no support to Jensen's (1986) agency theory for the monitoring effects of institutional investors, while my study finds consistent results. Unlike former studies that treat all firms as a whole, my study examines firms with relatively higher agency costs and those with relatively lower agency costs separately. Under the special setting of China, I find that the effects of mutual funds are more pronounced in firms facing higher agency costs, i.e. SOEs. My study further shows that institutional investors, which can lead to increases in dividend payout levels, can reduce the agency costs of free cash flow.

Third, to measure the institutional ownership, previous studies about institutional investors and dividend policy only consider the share volume of institutions' shareholdings. My research contributes to the literature by incorporating investment horizon of mutual funds based on the procedures outlined by Gaspar et al. (2005) and Attig et al. (2012).

Fourth, the thesis further contribute to the large literature (Chen et al., 2007; Ferreira and Matos, 2008; Aggarwal et al. 2011) which shows that mutual funds and foreign institutional investors can significantly improve firm value, while institutions such as banks and insurance companies can not. The previous literature examines institutional investors' influence on firm value but does not investigate the mechanisms through which institutional investors drive value enhancement. My research provides an explanation that institutional investors can improve firm value by increasing corporate cash dividends with the underlying objective to reduce the agency costs of free cash flows.

Last but not least, to the best of my knowledge, this is the first study relating institutional ownership and dividend policy in China, the second largest economy in the world, and my conclusions should have resonance in other transitional and emerging financial markets.

The remainder of the thesis proceeds as follows. Chapter 2 reviews the relevant literature and institutional background, and develops my hypotheses. Chapter 3 describes the data sample and descriptive statistics. Chapter 4 and chapter 5 discuss the regression models and my empirical results, respectively. Chapter 6 provides robustness tests and chapter 7 concludes.

## **Chapter 2. Literature review, institutional background and hypotheses**

### *2.1 Effects of institutional investors on firms*

The monitoring effects of institutional stock ownership on corporate governance have been studied extensively for many years. One strand of the literature focuses on the effects on firm performance. Smith (1996) shows that high level of institutional ownership leads to shareholder activism, which can increase shareholders' wealth. Woidtke (2002) finds that firms' Tobin's Q is positively related to the shares held by private pension funds. Using a comprehensive set of data from 27 countries including the U.S., Ferreira and Matos (2008) find that firms with higher stock ownership held by foreign and independent institutions, including mutual funds, have higher firm valuations. Taking advantage of a unique natural experiment setting in Sweden, Giannetti and Laeven (2009) show that firm valuation improves if public and large private pension funds increase their shareholdings. Focusing on U.S. firms, Chen et al. (2007) find evidence showing that only concentrated shareholdings by long-term institutions can increase a firm's performance, as measured by market returns and return on assets.

Another strand of the recent literature investigates the influences of institutional investors on specific corporate governance decisions. Aggarwal et al. (2011) find that institutional ownership can cause an improvement in a firm's Tobin's Q and that changes in institutional ownership over time leads to subsequent positive changes in firm-level governance. More specifically, they find that foreign institutions' ownership increases the likelihood that the board of a firm has a majority of independent directors, that the board size is appropriate, that the firm does not adopt a staggered board



provision, and that poorly performing CEOs are fired. Similarly, institutional investors are found to influence a firm's executive compensation structure (Hartzell and Starks, 2003) and a firm's forced CEO turnover decision (Parrino et al., 2003). Through interviews with both senior managers of financial institutions and board directors of listed companies, Yuan et al. (2009) show that in China, many active mutual funds exercise their influences on corporate management and that some directors confirmed the positive effects of financial institutions' participation in corporate governance. In contrast, all securities companies appeared to be passive shareholders.

## *2.2 Institutional ownership and dividend policy*

Institutional investors, who are assumed to be better monitors, are expected to reduce agency costs through exerting influence on a firm's financing decisions including its dividend policy. Myers (1998), Gomes (1999) and La Porta et al. (2000) suggest that managers and insiders may divert a firm's profits for perquisite consumption, empire building and other value-destroying activities. However, institutional investors could reduce the free cash flows under managers' control by pressing for increased dividend payments. Large payouts to shareholders may lead firms to raise external funds for expansion and, as a result, the firms must undergo monitoring by the capital market (Rozeff, 1982; Easterbrook, 1984). Therefore, a positive relation is expected between institutional ownership and dividend payments. Eckbo and Verma (1994) find that the magnitude of cash dividends increases with the voting power of institutional shareholders in Canada.

Motivated by the monitoring hypothesis and agency theory, Grinstein and Michaely (2005) test the relations between institutional ownership and dividends of U.S. firms. However, their results support neither the models predicting that high

dividends attract institutional clientele nor those suggesting that institutions cause firms to pay more dividends. According to Grinstein and Michaely (2005), institutions avoid firms that pay no dividends, but prefer low dividends among dividend-paying firms. In contrast, Short et al. (2002) support a positive and contemporary association between dividend payout and institutional ownership for the firms in U.K.. My thesis will test whether institutional investors (mutual funds and BIS) in China exert monitoring influences on firms through affecting dividend policies, especially for the firms with higher potential agency costs.

The relations between dividends and institutional stock ownerships can also be explained by taxes, an issue addressed by Jain (1999), and the substitution signaling effects of Miller and Rock (1985). Managers of listed firms may rationally react to the existing and potential investors' demands by adjusting dividend policies, as noted by the catering theory of Baker and Wurgler (2004). According to Jain (1999), tax-exempt institutions tend to be neutral of dividend payments while the non-tax-exempt institutions may avoid firms with high levels of dividends when making investment decisions. Desai and Jin (2011) find that dividend-averse institutions, defined as independent investment advisors who have a clientele that consists primarily of high net worth individuals and hedge funds without tax exemptions, prefer low dividend-paying firms, and that changes in the tax costs of institutional investors result in changes in the dividend policies of the firms they invest in. According to the signaling theory of Miller and Rock (1985), dividends are considered to signal managements' private information regarding the firm's future earnings. Zeckhauser and Pound (1990) suggest that institutional shareholdings can serve as an alternative signaling method to dividend payments. Amihud and Li (2006) find that, consistent with the substitution effect, the role of dividends as a means of conveying information about the firm value

is smaller for the firms with more institutional holdings.

### *2.3 Institutional background*

(Insert Figure 1)

The stock markets in China have gone through dramatic changes during the past two decades. The percentage of listed firms that paid dividends to their stockholders was 48.39% in 2003 and this increased to 67.27% in 2011<sup>2</sup>, as shown in Figure 1. The average dollar amount of cash dividends per firm has grown from 94 million Chinese Yuan (CNY) in 2003 to 196 million CNY in 2011.

Traditional agency theory focuses on the conflict between firm managers and a diversified group of shareholders. However, in many firms in China and other Asian and European countries, there arises another kind of agency problem derived from the risk of controlling shareholder expropriation of minority investors (Johnson et al., 2000; Djankov et al., 2008; Jiang et al., 2010). There are many, and often subtle, ways that controlling shareholders can exert influences on the operations of the firms they own and thus can extract private benefits at the costs of minority shareholders. This is particularly true for the listed Chinese State-owned Enterprises (SOEs) due to the fact that the state ownership is highly concentrated and that the trading of shares owned by all levels of governments, state agencies and other legal entities are restricted. Although the split-share structure reform, which took place from 2005 to 2007, converted previously non-tradable shares often held by government agencies into tradable shares, there are still restrictions on their sales. First, the extensive lock-up periods were required which prevented the government agencies from dumping their shares into the market. Second, the government agencies still want to control the firm.

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<sup>2</sup> By way of comparison, the percentage of firms paying cash dividends in 22 countries worldwide is 75% in the period 2003 to 2007 (Aggarwal et al., 2011).

Thus, agency problems between controlling and minority shareholders are unlikely to be fully resolved. In addition, the overall immature regulatory and legal mechanisms, and inadequate disclosure of financial information, make it hard for individual shareholders in China to directly monitor the managers and controlling shareholders. Therefore, institutional investors, who pool the investment of various individuals, become particularly important in helping strengthen the bargaining power of minority shareholders in the corporate governance process.

Since 2000, the China Securities Regulatory Commission (CSRC) has made substantial regulatory efforts to develop financial institutions with the purposes that the institutional investors can improve the corporate governance of listed firms and stabilize the stock markets. The securities mutual funds, the largest institutional investors in China, have grown very fast since then. At the end of 2011, there were 66 fund management companies managing 1,019 mutual funds. The total market value of equity held by mutual funds has increased rapidly over time and was over 1.04 trillion CNY (or 8.61% of all tradable A-shares in the market) at the end of 2011. On average, in my sample, the total mutual fund ownership for a firm is 5.6%, while the highest percentage reaches 66.5%<sup>3</sup>, suggesting that the financial institutions could exercise considerable influence in the listed firms where they have a large portion of ownership. The securities mutual fund industry in China is largely organized along the lines of those in the U.S. and other developed countries. Management fees depend on investment performance and fund size.<sup>4</sup> The emphasis on stock performance and extensive competition puts pressure on mutual fund managers to make profitable investment decisions for the funds' unit holders and to enhance the corporate

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<sup>3</sup> This number 66.5% is the mutual fund ownership of the listed firm Zhongbai Group (stock code: 000759) in year 2008, whose largest 10 shareholders include 9 mutual funds investors.

<sup>4</sup> For open-end funds, investors can choose to withdraw at any time.

governance of the firms that they invest in. As found by Yuan et al. (2008), mutual fund ownership is associated with improved firm valuations.

The other financial institutions, such as commercial banks, insurance companies and securities companies possess different characteristics from mutual funds and are considered to have limited monitoring roles, as indicated in the large body of literature that studies other countries (Chen et al., 2007; Ferreira and Matos, 2008). The securities companies are the second biggest financial institutions which hold shares of listed firms but they normally have close business ties with listed firms in their capacity of being the underwriters of share issues and/or financial consultants. Therefore, to protect their business relations, securities companies are less willing to challenge management decisions (Brickley et al., 1988 and Cornett et al., 2007) and appear to be passive and less-effective in monitoring (Yuan et al., 2009). Similar to securities companies, banks and insurance companies also have various business relations with listed firms. Moreover, the equity ownerships of these financial institutions are limited. The means total percentage equity ownerships of banks and insurance companies per firm are 0.2% and 1.8%, respectively, for the year 2003 and 2011. According to the Commercial Bank Law of the People's Republic of China (2003, Article 43), banks are forbidden to hold firms' shares directly and actively. Therefore, the commercial banks in China only hold firm shares passively if the shares are collaterals for company loans. Insurance companies are subject to strict quotas for stock investment.

(Insert Figure 2)

In contrast, mutual funds do not have many business relations with listed firms. Following Chen et al. (2007), I investigate the effects of mutual fund ownership<sup>5</sup> and

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<sup>5</sup> Since 2003, certain foreign institutional investors are permitted to trade A-shares in Chinese stock

the ownership of BIS separately. The other institutions such as trust companies only have an extremely small ownership of listed firms and thus are not included in my analysis. Figure 2 shows the annual equity ownership of the different categories of institutions over time. The total investments of BIS are always dwarfed by those of mutual funds throughout my sample period. Panel B of Figure 2 shows the total market value of institutional ownership of listed firms. The change over time reflects changes in stock prices as well as the growth in the number of listed firms.

#### *2.4 Hypothesis*

Motivated by the monitoring hypothesis and Jensen (1986)'s agency theory, I examine the degree to which institutional equity ownerships affect dividend payments in China. Specifically, I hypothesize that:

H1: Mutual fund ownership is positively related with dividend payments; and the BIS institutions with their limited monitoring abilities have no predictive power to explain dividend payments.

According to Rozeff (1982), firms with higher agency costs have higher optimum dividend payouts. I further hypothesize that:

H2: The monitoring effects of mutual fund ownership on dividend payments are more pronounced for firms with potentially more serious agency problems, i.e., the state-owned enterprises and firms with relatively higher free cash flows.

Conceptually, mutual funds influence a firm's management to increase dividend payments, in order to reduce agency costs and improve firm performance. To test these

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markets. As the qualified foreign institutional investors (QFII) are considered closest to domestic mutual funds in terms of investment objectives and are more independent than banks, insurance companies, and securities companies, I include them in the mutual fund group when I conduct my tests. As the QFII investment overall is small in my sample period, my results are consistent if the QFII is excluded from the group of mutual funds.

conjectures, I perform additional analysis on the direct effects of mutual fund ownership on agency costs and firm performance and hypothesize that:

H3: Mutual fund ownership can reduce agency costs and improve firm valuations.

## Chapter 3. Data and Variables

### *3.1 Sample selection*

To test the hypotheses posed in the previous chapter, I use firm-level institutional ownership and dividend data for a sample of firms listed on the Shanghai and Shenzhen stock exchanges for the period 2003-2011. Institutional ownership data are available from 2003 onwards and are obtained from WIND information system. Dividend and other accounting data are obtained from China Stock Market Accounting Research (CSMAR) database. I make several adjustments to my sample. First, the sample of listed firms does not contain financial companies (e.g., banks, securities companies, insurance companies and investment trusts) as these companies have different accounting rules, special financial policies, and are highly regulated. Second, firms in the sample must be listed for at least one full year and the firm-year observations with missing variable values are deleted. Third, variables defined as ratios are winsorized at the upper and lower 1%. After the above adjustments, 13,105 firm-year observations are obtained. The total number of the firms varies from a minimum of 1,172 in 2003 to a maximum of 1,968 in 2011.

### *3.2 Variables*

I use two measures of dividend as the dependent variable in my models. They are the total cash dividend per share during a year as in Short et al. (2002), denoted by DIV, and the firm's decision to pay a cash dividend (Li and Zhao, 2008; Booth and Chang, 2011), denoted by DIVDM, which is a dummy variable that equals one if a firm makes dividend payments in a year and otherwise zero. For each firm, I also measure the



change in dividend payments for two consecutive years,  $\Delta\text{DIV}$  and  $\Delta\text{DIVDM}$ . Some studies also use dividend payout ratio (Lintner, 1956), which is dividend over earnings, to measure dividend policies. I include earnings per share as a control variable instead and therefore do not use the dividend payout ratio as the dependent variable. To normalize the cash dividend payment and buttress my conclusions, dividend yield defined as cash dividend over book assets (DIVA) is used as a third measure of dividend policy in the robustness test. The measure of dividend yield (DIVA) follows the ideals suggested by Grinstein and Michaely (2005) and Li and Zhao (2008).

For the measurement of the effects of equity ownership, the institutional investors are separated into two categories. The first category is the mutual funds. Following Yuan et al. (2008), the ownership of them is measured by the ratio of common shares held by mutual funds at the year-end to a firm's total number of shares, denoted by MF, and the ratio of the market value of mutual funds-held shares to the total market value of a firm (market value of equity plus book value of debt) at the year-end, denoted by MFMV. The second category includes the banks, insurance companies and securities companies. Their ownership is measured by the percentage of common shares held by these institutions at the year-end, denoted by BIS, and the ratio of the market value of shares held by these institutions to the total market value of a firm at the year-end, denoted by BISMV. According to Chen et al. (2007), Gaspar et al. (2005) and Attig et al. (2012), who all study institutional investors' effects on other corporate governance aspects, the investment horizon is an important variable that reflects the mutual fund's incentives to place pressure on firms it invests in. Short-term investors with high portfolio turnover should trade their shares frequently and may not have the incentives to enhance corporate governance, while the long-term and more stable institutional investors are more likely to improve the governance quality of the firms they invest in.

Thus, in a robustness test, mutual fund investment horizon (WACR) is considered as a factor that influence the mutual fund's effects on dividend policy.

Following the literature, I include other firm-specific characteristics as control variables. They are the growth opportunity measured by sales growth (GROWTH), ownership concentration estimated by the Herfindahl index of the top ten shareholders (HERF10), earnings per share (EPS), natural logarithm of total assets (LNASSET), managerial ownership (MAO), leverage measured as total liabilities over total assets (LEVE), return on assets (ROA), and daily stock return volatility (VOLATILITY). EPS is included because dividend paying capacity is often constrained by profits (Lintner, 1956; Brav et al. 2005). The free cash flow (FCF) is the ratio of net operating cash flows over total assets, following Fenn and Liang (2001). A dummy variable (SOE), which is coded one if a firm's ultimate controlling shareholder is the government or government agency and zero otherwise, is also included because some studies (Cheng et al., 2009; Xi et al., 2009; Wang et al., 2011; Bradford et al. , 2013) find that state ownership can greatly affect the dividend policy in China. In additional tests, I examine institutional investors' influence on agency costs and firm performance. I follow Ang et al. (2000) and estimate the agency costs as operating expense scaled by annual sales. The industry-adjusted agency cost (AC), which is the difference between each firm's agency costs and the median agency costs of the industry in a year, is used as dependent variable. Similarly, the industry adjusted return on assets (ROA) is used as a firm's performance measure. Industry classification is according to the two-digit industry code provided by CSMAR database. The complete definitions of these variables are reported in the Appendix.

(Insert Table 1)

Panel A of Table 1 presents the descriptive statistics of the main variables. On average, a mutual fund and a BIS institution respectively hold 5.6% and 1.5% of a firm's shares during the period from year 2003 to year 2011. Among the 13,105 observations, about 52.9% (6,934) firm-year observations have cash dividend payments, and the average cash dividend payout is 0.156 CNY per share. On average, the dividend over firm size measured by book value of assets is 2.2%.

Panel B of Table 1 shows the mean values of key variables in double sorted subsamples. Here, I compare the key variables of SOEs versus non-SOEs and of dividend-paying firms versus non-dividend-paying firms. Although the proportion of SOEs with cash dividend payments (4,310 or 55%) is higher than those of non-SOEs with cash dividend payment (2,624 or 50%), the average amounts of cash dividends between SOEs and non-SOEs are not significantly different. So I do not find evidence in support of Chen et al. (2009), who suggest that SOEs tend to issue more cash dividends than non-SOEs because cash dividend distributions might be a way for state-dominated firms to expropriate minority shareholders. Similarly, there is no significant difference in the institutional ownership of SOEs and non-SOEs. What is consistently significant is the higher agency costs in SOEs than in non-SOEs. The agency costs are also significantly higher in non-dividend-paying firms than in dividend-paying firms. Meanwhile, the mutual fund ownership in dividend-paying firms is 0.063 which is also much higher than that in non-dividend-paying firms (0.018). These findings are consistent with my hypotheses that SOEs are more likely to suffer from agency problems than non-SOEs, and that dividend payment helps lower agency costs and mutual funds ownership are positively related with cash dividends. The Pearson correlation coefficients reported in Table 2 show that the measures of institutional ownership are all significantly and positively related with dividend

payments, DIV.

(Insert Table 2)

## Chapter 4. Regression Models

### 4.1 The contemporary relation between institutional ownership and dividend policy

Following Desai and Jin (2011), I use the Tobit and Fama-MacBeth regression models to test the contemporary relation between institutional ownership and dividend payments. The Tobit regression model is specified as follows:

$$DIV_{i,t} = \alpha_1 + \alpha_2 MF_{i,t}(BIS_{i,t}) + \alpha_3 Control_{i,t} + Dummy(industry, year) + \varepsilon_{i,t}$$

eq.(1),

where  $DIV_{i,t}$  refers to the cash payment of firm  $i$  in year  $t$ ,  $MF_{i,t}$  and  $BIS_{i,t}$  are the ownerships of the two categories of institutional investors, and  $Control_{i,t}$  represents the control variables specified earlier. Industry and year dummies are included.

The Fama-MacBeth regression is a cross-sectional regression in each year. The model is the same as eq.(1) except that the year dummy variable is excluded. For each variable, the average of the annual coefficients is presented and the null hypothesis that the mean slope coefficient equals zero is tested by the t-statistics adjusted for autocorrelations in the annual coefficients. Regression models are also run by replacing MF and BIS by MFMV and BISMV, respectively. As a second measure of dividend policy, the dummy variable DIVDM is used to replace DIV in both models to test whether institutional investors have any relation with the decision to pay cash dividends or not. When DIVDM is the dependent variable in eq.(1), the Tobin model is changed to a Probit model.

### 4.2 Does institutional ownership cause dividend policy to change?

The Tobit and Fama-MacBeth models are used to examine if there is any

contemporary relation between institutional stock ownership and dividends. In the following models, I further test whether institutional ownership can change future dividend payments or influence corporate decisions about paying cash dividends with the methodologies widely adopted in the literature (Yuan et al., 2008; Desai and Jin, 2011; and Aggarwal et al., 2011). More specifically, I use the firm-fixed effect models that include the institutional investor's variables lagged for one year relative to the dependent variable and that control for omitted (unobservable) heterogeneous firm-specific effects.<sup>6</sup> The fixed-effect regression model is specified as follows:

$$DIV_{i,t} = \alpha_{1,i} + \alpha_2 MF_{i,t-1} (BIS_{i,t-1}) + \alpha_3 Control_{i,t-1} + Dummy(year) + \varepsilon_{i,t}$$

eq.(2).

In addition to the fixed-effect model, I also adopt the change models, for which changes in institutional ownerships from time  $t-2$  to  $t-1$  for firm  $i$ ,  $\Delta MF_{i,t-1}$ , are used to explain the changes of dividends from time  $t-1$  to  $t$ ,  $\Delta DIV_{i,t}$ . This method is also used by Aggarwal et al. (2011) and Li et al. (2011) to deal with the endogeneity problem. The regression with changes in variables is specified as follows:

$$\Delta DIV_{i,t} = \alpha_1 + \alpha_2 \Delta MF_{i,t-1} (\Delta BIS_{i,t-1}) + \alpha_3 \Delta Control_{i,t-1} + Dummy(industry, year) + \varepsilon_{i,t}$$

eq.(3).<sup>7</sup>

where  $\Delta DIV_{i,t} = DIV_{i,t} - DIV_{i,t-1}$ ,  $\Delta MF_{i,t-1} = MF_{i,t-1} - MF_{i,t-2}$  and  $\Delta BIS = BIS_{i,t-1} - BIS_{i,t-2}$ . In addition to the effects on the payment amounts, I also expect that institutional investors can influence the firm's decision whether to pay cash dividends or not in the next year. Therefore,  $DIVDM_{i,t}$  and  $\Delta DIVDM_{i,t}$  are also used as the dependent

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<sup>6</sup> The results from Hausman Tests suggest that it is more appropriate to use fixed effect models here than random effect models.

<sup>7</sup> When  $DIV_{i,t-1}$  is already high, it might be difficult for the firm to increase dividends further. For the regression model of eq.(3), we also add  $DIV_{i,t-1}$  as an explanatory variable for  $\Delta DIV_{i,t}$  and the estimated coefficient is negative and significant. The results for the other variables do not change much.

variables in eq.(2) and eq.(3), respectively, where  $DIVDM_{i,t}$  is coded one if firm  $i$  has dividend payment in year  $t$  and otherwise zero, and  $\Delta DIVDM_{i,t} = DIVDM_{i,t} - DIVDM_{i,t-1}$ .

As stated in the hypotheses, if institutions can influence firms' decisions to make, or to increase, dividend payments under the motivation of reducing agency costs, I can further expect that this positive effect of institutions will be more pronounced for firms with higher agency costs. In the following sections, the above tests are conducted for different subsamples.

## Chapter 5. Empirical results

### *5.1 Contemporary analysis between institutional ownership and dividend policy*

(Insert Table 3)

Panel A of Table 3 reports the results of the Tobit and Fama-MacBeth regression models specified in eq.(1) using DIV as dependent variable. Columns 1-6 of Panel A report the results of Tobit regressions with the percentage of shares held by two different institutions (MF and BIS) as the main explanatory variables (columns 1-3), and with the ratio of the market value of institutional shareholdings (MFMV and BISMV) to the total market value of the firm at the year end as the main explanatory variables (columns 4-6). When including both MF and BIS institutions in the same regression (columns 1 and 4), the coefficients on BIS (and BISMV) do not seem to be related to cash dividend payments. On the contrary, the estimated coefficients on MF (and MFMV) are all significantly positive. Therefore, my results show that mutual fund ownership is positively associated with dividend payout while other institutional ownership has no significant relation with dividends. To control for the potential cross-correlations in residuals, I use the Fama and MacBeth (1973) methodology to run regressions for each year separately and report the Newey-West (1987) adjusted t-statistics. In columns 7-12, the mutual funds are shown to be positively related with cash dividend payments while BIS institutions are not, consistent with the results from the Tobit regressions.

The results in Panel A of Table 3 also show that higher free cash flows and earnings are associated with higher dividend payments while higher growth opportunities (sales growth) are associated with lower dividend payments. These



findings imply that firms with more free cash flows and fewer growth opportunities are more likely to increase dividend payments. In the following analysis in next section, I will test directly whether the free cash flow and growth opportunities can influence the effects of institutional ownership on dividend policy. Prior studies for other countries (e.g., Jensen et al., 1992; Chen and Steiner, 1999) indicate that managerial ownership is a substitute mechanism for dividend payments to reduce agency costs and there should be a negative relation between managerial ownership (MAO) and dividend policy. However, both Fenn and Liang (2001) and I find a positive relation between managerial ownership and dividend policy. Since managerial ownership is expected to mitigate the agency problem between shareholders and managers and align their interests, higher managerial ownership can prevent managers from taking value-destroying activities and more cash flow can be saved to pay out as dividends. The significant and negative coefficients on leverage (LEVE) reinforce the conclusions by Jensen (1986) that debt can also be used as a substitution for cash dividends to reduce agency cost of free cash flow.

In Panel B of Table 3, dividend dummy (DIVDM) is used to replace dividend per share (DIV) as the dependent variable. I run the Probit and Fama-MacBeth regressions respectively, and find similar results to those shown in Panel A. When both mutual funds and BIS institutions are included in the Probit models (column 1 and 4), the coefficients on mutual funds are all highly significant, but those on BIS are not. There is a positive relation between mutual funds ownership and the decision to pay cash dividend.

### *5.2 Does institutional ownership drive changes in dividend policy?*

(Insert Table 4)

The contemporary analysis shows positive and significant coefficients on MF and MFMV in explaining dividend payments. Now I turn my attention to examine whether institutional ownership can influence future dividend decisions, using the firm-fixed effect regression specified in eq.(2) and the regression with changes in variables specified in eq.(3). Panel A of Table 4 reports the results of the fixed effect and change models when DIV is the dependent variable. In my analysis, the firm and year fixed effect models are used to control for the possibility that endogeneity arises from unobserved firm-specific time-invariant factors, which may be related to institutional shareholdings and dividend policy. All mutual fund variables are lagged one year relative to the dependent variables. The mutual fund shareholdings are highly significant, while BIS shareholdings are not significant in all columns. The results are not only statistically but also economically significant. In column 1 (and column 4), one standard deviation increase in MF (and MFMV) will increase DIV by 12.83%<sup>8</sup>(and 12.99%) in the following year. The free cash flow (FCF) and earnings (EPS) are shown to be positively and significantly related to dividend payout.

In columns 7-12 of Table 4, I observe that the coefficients on the changes of mutual fund ownership ( $\Delta$ MF and  $\Delta$ MFMV) are also positive and highly significant<sup>9</sup>. In contrast, none of the coefficients on BIS institutional ownership ( $\Delta$ BIS and  $\Delta$ BISMV) are significant no matter whether two groups of institutions are examined separately or jointly in the models. Thus, the results on the changes analyses are overall consistent with those from the fixed effects regressions.

Since the institutional investors are expected to influence not only the amount of dividend payments but also the firms' decisions to pay dividends, I use an alternative

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<sup>8</sup> I obtain this estimate by multiplying the value of the coefficient (0.130) by one standard deviation of MF (0.076) and then dividing by the average DIV (0.077).

<sup>9</sup> Following Aggarwal et al. (2011), I also cluster the observations at the firm-level for the fixed effect models and the change models. The results are still consistent with those reported in table 4.

measure of dividend payments, DIVDM, which is coded one if a firm pays a dividend in a specific year, and zero otherwise, as the dependent variable, in the fixed-effect model of eq.(2) and the change model of eq.(3). I report the results in Panel B of Table 4. Columns 1-6 present the results of the lagged institutional investor variables in the fixed-effect models, and columns 7-12 show the results of the lagged institutional variables in the change models. I observe that the results from the model estimations are highly consistent with the findings in Panel A. When including both MF and BIS in the regressions (columns 1, 4, 7 and 10), all the coefficients on the mutual fund variables ( $\Delta MF$  and  $\Delta MF MV$ ) are significantly positive while those of BIS institutions ( $\Delta BIS$  and  $\Delta BIS MV$ ) are not statistically significant. These results show that mutual funds, unlike other institutional investors, can increase the likelihood of firms paying dividends.

### *5.3 Effects of institutions on dividend policy in SOEs versus non-SOEs*

(Insert Table 5)

Many firms in China are directly or indirectly owned by the government. The SOEs are considered to have higher agency costs than in the case for non-SOEs because, in addition to the agency problems between managers and shareholders, SOEs are also faced with the potential conflicts of interests between the state and the minority shareholders. I argue that the influence of institutional investors on dividend policies will be more pronounced in SOEs because of the higher and more complex agency costs. The regression models of eq.(2) and eq.(3) are run separately for SOEs and non-SOEs and Table 5 presents the results.

In Panel A with DIV as the dependent variable, for both firm-fixed effect models and change models, I find that the estimated coefficients on mutual funds (MF, MF MV,

$\Delta MF$  and  $\Delta MFMV$ ) are positively significant for SOEs, but are insignificant for the non-SOEs. I further show that the absolute values of the estimated coefficients on MF (0.151) and MFMV (0.132) for SOEs in Table 5 are higher than the corresponding figures (0.130 for MF and 0.115 for MFMV) for the whole sample in Table 4<sup>10</sup>, indicating that the effects of mutual funds in SOEs are stronger. According to the fixed-effects models in Panel A, in column 1 (and column 2), one standard deviation increase in MF (and MFMV) will respectively cause the DIV of an SOE to increase by 13.84% (and 13.51%). I find similar results for SOEs in Panel B for both the firm-fixed effects models and change models. Mutual funds can influence firms' decisions to pay cash dividends and the effect is statistically significant for SOEs. For non-SOEs, the coefficients on mutual funds are significant for fixed-effect models (columns 5-6), but insignificant for change models (columns 7-8). The findings are consistent with the hypothesis that the monitoring effects of institutional investors on dividends are stronger in the firms with higher potential agency problems, i.e. SOEs.

In both Panel A and Panel B, the BIS institutions are shown to have some positive effects on dividends for the non-SOEs and the estimated coefficients are statistically significant and large in magnitude in some regressions. But the effects of BIS institutions are not consistent in change regressions and fixed effect regressions. It is not robust enough to make a strong conclusion about BIS institutions. Although the coefficients on BIS (BISMV) in regressions (7) and (8) are bigger than the coefficients on MF (MFMV) in regressions (3) and (4), it is because the value of BIS (BISMV) is much smaller than MF (MFMV), as showed in the summary statistics of Table 1, and does not mean that BIS institutions have stronger effect than mutual funds. In contrast, the estimated coefficients on the BIS variables are consistently insignificant for SOEs.

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<sup>10</sup> The Chow-Test is conducted to compare the coefficients on the same variables in two different regressions and the test result indicates a significant difference between them.

This finding demonstrates that different institutional investors have different impacts on listed firms. The classifications of both institutional investors (MF versus BIS) and listed firms (SOEs versus Non-SOEs) are necessary when conducting the analysis on the effects of institutional stock ownerships.

#### *5.4 Can free cash flow enhance the effects of institutional ownership?*

The free cash flow theory postulated by Jensen (1986) suggests that agency costs may rise because of large free cash flows available to managers for value-destroying activities, especially when firms have fewer growth opportunities, and that paying cash dividend is an efficient way to reduce agency costs. If institutional investors monitor firms' dividend policies, they would tend to lobby for increased cash dividends from the firms with relatively higher free cash flows. In order to examine this effect, for each year and industry, I run a cross-sectional regression of free cash flows (FCF) on Tobin's Q, which is a proxy of growth opportunities (Lang and Litzenberger, 1989; Denis, 1994; Jung et al., 1996). The firms with higher growth opportunities tend to retain more free cash flows and the regression residuals measure the part of the free cash flow that cannot be explained by the firm's growth opportunities. A positive residual reflects a relatively higher free cash flow retained by the firm compared to its peers in the same industry. Thus, I define a dummy variable, FCFDM, which is coded one if the regression residual for a firm is positive and zero otherwise. The regression model of eq.(2) (and eq.(3)) is modified by adding an interaction term of FCFDM (and  $\Delta$ FCFDM) and institutional ownership and the results with DIV (and  $\Delta$ DIV) as the dependent variable are presented in columns 1-2 (and columns 3-4) of Table 6.

(Insert Table 6)

The estimated coefficients on the interaction term in columns 1 and 2,

MF\*FCFDM (MFMV\*FCFDM) are all positively significant while those of MF (MFMV) are no longer significant. Thus, the positive effect of MF on DIV only exists in the firms with positive FCFDMs. These results imply that mutual funds use their influence to press firms to distribute more cash dividends, if the firms have relatively higher free cash flows and lower investment opportunities, and thus inhibit the managers from overinvesting. In columns 5 and 6, the results of the models using DIVDM as dependent variable are overall consistent with the results of the models using DIV as dependent variable. For the change models in columns 7 and 8, the estimated coefficients on the interaction term are not significant at the 10% level but are still positive.

In an untabulated test, I also divide the firms into two groups according to the ratio of free cash flow to Tobin's Q. In each year and industry, if a firm has a free-cash flow to Tobin's Q ratio greater than the cross-sectional median, the firm is considered to have relatively higher potential for agency problems, and otherwise lower. When the two groups of firms are tested separately, I find the coefficients on mutual fund ownership in firms with higher ratios of free cash flow over Tobin's Q are statistically higher and more significant than those with lower ratios of free cash flow over Tobin's Q.

### *5.5 Additional analysis: Effects of institutional ownership on agency costs and firm performance*

Prior literature tests the monitoring effects of institutional investors by measuring their impact on firm performance and finds a positive relation between them. I expect that mutual funds help to reduce a firm's agency costs through their pressure on the firm to increase cash dividends, as observed in previous sections. As a supplementary

analysis, I directly test whether institutional investors help reduce agency costs and which category of institutional investor is the most effective in monitoring firms. In the following analysis, I follow Ang et al. (2000) and define agency cost as the operating expense scaled by annual sales. I use a firm's agency cost minus its industry median to get the industry-adjusted agency cost (AC) and use it as the dependent variable. The effects of institutional ownerships on agency costs for SOEs and non-SOEs are examined separately. In addition to the control variables used by Yuan et al. (2008), I also include the number of directors (DIRECTORS), number of independent directors (INDEP), and the duality of CEO and chairman (DUA), because these board characteristics are widely considered by the literature to be related with agency costs and firm valuations (Yermack, 1996; Brickley et al., 1997; Boone et al., 2007; Cheng, 2008). More detailed definitions of these variables can be found in the Appendix.

(Insert Table 7)

The results from the full sample (columns 1-4), the SOE sample (columns 5-8), and non-SOE sample (columns 9-12) are all provided in Table 7. For each sample, I use both firm-fixed effect models of eq.(2) and change models of eq.(3) and replace the dependent variable by agency costs. The negative and significant estimated coefficients on MF, MFMV,  $\Delta$ MF, and  $\Delta$ MFMV imply that institutional investors can reduce agency costs<sup>11</sup>. The negative effects of mutual fund share ownership on agency costs are stronger in SOEs than in non-SOEs. The results related to BIS institutions are mixed and appear to have insignificant impact on agency costs in all the change regressions.

With the large body of literature studying institutional ownership and firm

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<sup>11</sup> One concern is that the regression results are driven by the negative effect of agency costs on institutions' investment preferences. According to the reverse regression results in Table 8 (discussed later), the estimated coefficients of  $\Delta$ AC are not statistically significant in explaining  $\Delta$ MF or  $\Delta$ MFMV.

performance, I also estimate regressions with industry-adjusted return on assets (ROA) as the dependent variable. Table 8 shows the regression results of eq.(2) and eq.(3) when the dependent variable is replaced by industry-adjusted ROA. Consistent with the prior literature (Yuan et al., 2008; Aggarwal et al., 2011), the estimated coefficients on mutual funds in Table 8 (both the firm fixed-effect model and change model) are significantly positive in explaining firm valuation, especially in SOEs. Meanwhile, the coefficients on BIS ownership are not significant in most regressions. The results are overall consistent when ROA is replaced by operating profit over total assets, which is used as firm performance measure by Yuan et al. (2008) and Anderson and Reeb (2003). The results using operating profit over total assets are not tabulated.

(Insert table 8)



## Chapter 6. Robustness tests

### *6.1 Reverse regression: Do changes in dividend policy and changes in agency cost drive the changes in institutional ownership?*

(Insert Table 9)

The endogeneity problem that arises from unobserved and omitted factors has been mitigated by using the firm-fixed effect models in my above analysis. Another important concern is that institutional investors may alter their portfolios according to the changes of firms' dividend policy. I conduct change regressions (or the first-difference regressions) in the reverse direction to examine if firms with increasing dividend payments or decreasing agency costs can cause institutional investors to buy more shares. This methodology to deal with the endogeneity problem has been widely adopted in the literature (Aggarwal, 2011; Desai and Jin, 2011; Li et al., 2011). Changes in dividend payments and agency costs from time  $t-2$  to  $t-1$  are used to explain changes in institutional ownership from time  $t-1$  to  $t$ . The dependent variables are institutional ownership (each of  $\Delta MF$ ,  $\Delta MFMV$ ,  $\Delta BIS$  and  $\Delta BISMV$ ) multiplied by 100 because the values of institutional ownership is small.

Table 9 reports the results of the reverse change regressions using the full sample. Columns 1-4 report the impact of the amount of cash dividends ( $\Delta DIV$ ) on the dependent variable. Columns 5-8 test whether mutual funds and other institutions prefer to invest in dividend-paying firms ( $\Delta DIVDM$ ). The estimated coefficients on  $\Delta DIV$  and  $\Delta DIVDM$  in explaining the changes in mutual fund ownerships ( $\Delta MF$  and  $\Delta MFMV$ ) are statistically insignificant (columns 1, 2, 5 and 6). Therefore, dividend

policy is not a major issue in explaining mutual funds' investment decisions in China.<sup>12</sup> However, the coefficient estimates on  $\Delta\text{DIV}$  and  $\Delta\text{DIVDM}$  are significantly positive in explaining BIS institutional ownership (columns 3, 4, 7 and 8), indicating that the BIS investors increase their investment in firms with increasing dividend payments. A plausible reason for this finding is that most BIS investors are not active in the investment market, and sometimes their investment policies are highly constrained. Therefore, BIS investors may prefer the firms with non-zero dividend policies. The estimated coefficients on industry-adjusted agency costs (AC) are not significant in any column, indicating that the decreasing agency costs of listed firms can influence neither mutual funds nor other institutional investors' investment changes. Overall, the evidence supports the notion that the causation effect is from mutual funds to dividends but not from dividends to mutual funds, and that firms with increasing dividend payments do cause BIS institutions invest more.

In unreported results, the endogeneity concern between firm performance (ROA) and institutional ownership is also tested. I use industry-adjusted return on assets (ROA) from time  $t-2$  to  $t-1$  to explain changes in institutional ownership from time  $t-1$  to  $t$  and find the coefficients on ROA are not significant for both mutual fund and BIS ownership measures, suggesting that firms with increasing operating performance lead to neither mutual funds nor BIS institutions' investment changes.

## 6.2 *Instrumental variable estimations*

(Insert Table 10)

An alternative way to address the potential endogeneity problem of mutual funds'

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<sup>12</sup> I run the same regressions with changes in institutional ownership as the dependent variable for SOEs only and find that the estimated coefficients on  $\Delta\text{AC}$ ,  $\Delta\text{DIV}$  and  $\Delta\text{DIVDM}$  are insignificant in explaining  $\Delta\text{MF}$  and  $\Delta\text{MFMV}$ .

ownership with respect to dividend payments is to use instrumental-variable estimation. Following the approaches used by Yuan et al. (2008), and similar approaches adopted by Aggarwal (2011) and Ferreira and Matos (2008), I use the membership in the Shanghai 180 Index and the Shenzhen Component Index as the first instrument for mutual fund ownership. A dummy variable (INDEX) is defined to take the value of one if a firm is included in either index in a year and zero otherwise. A firm's membership in these indexes depends on the market capitalization, stock trading liquidity and the market position of a firm in its industry. Therefore, the inclusion of a firm in an index can attract institutional investors due to higher liquidity. The other instrument for the mutual fund ownership is the ratio of tradable A-shares over the total number of shares (PROA). Firms with more tradable A-shares are more likely to be invested in by mutual funds.<sup>13</sup> The index membership and the proportion of tradable shares of a firm as determinants of mutual funds' ownership are unlikely to be systematically related with the firm's dividend policies.

I use the standard two-stage least squares (2SLS) tests to mitigate the endogeneity problem. In the first-stage regressions, mutual fund ownership (each of MF and MFMV) is used as the dependent variable and the explanatory variables include all the control variables used in Table 3, industry dummies and year dummies. The explanatory variables are lagged by one year. The results shown in columns 5 and 6 of Table 10 support the view that the mutual fund ownership is positively associated with the proportion of tradable A-shares and index membership. F-tests reported at the bottom of first stage indicate that the hypotheses that instruments can be excluded from the first-stage regressions are strongly rejected. In the second-stage regression,

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<sup>13</sup> Before the split-share reform that began in 2005, about two-thirds of the A shares are non-tradable shares owned mainly by the Chinese government, its affiliated bodies and legal persons. Institutional and individual investors can only hold the tradable shares. After the reform, the formerly non-tradable shares were subject to staggered lock-up periods that lasted several years.

the predicted value of mutual fund's ownership from the first stage are then used in the main fixed-effect model specified by eq. (2) to replace the original mutual funds' ownership variables. The regression results are presented in columns 1-4 of Table 10. Comparing the results from Table 10 and the corresponding results in Table 4, the coefficient estimates are still positive and remain significant. Therefore, my findings on the positive impact of mutual funds' ownership on dividends are robust to the instrumental variable estimations.

### *6.3 Institutional investment horizon*

(Insert Table 11)

According to the literature (Gaspar et al., 2005; Chen et al., 2007; Attig et al., 2012), in addition to the institutional investors' holding volume, the investment horizons are also important factors related to institutions' monitoring effects. Short-term investors should trade their shares frequently and may not have the incentives to enhance corporate governance of the firms they invest in, while the long-term institutional investors are more likely to improve the governance quality for the benefits of all outside shareholders. Both Chen et al. (2007) and Attig et al. (2012) find that institutional investors with longer investment horizons have greater incentives and efficiencies to engage in effective monitoring. To identify the mutual fund investment horizon, I follow the Gaspar et al. (2005) method to compute the "churn rate", which measures the speed of mutual fund investors' portfolio adjustment. A higher churn rate indicates a shorter investment horizon and a lower churn rate indicates a longer investment horizon.

To be specific, the churn rate (CR) of the investments of mutual fund  $f$  at quarter  $q$  is calculated as follows:

$$CR_{f,q} = \frac{\sum_{i=1}^{N_{f,q}} |S_{i,f,q}P_{i,q} - S_{i,f,q-1}P_{i,q-1} - S_{i,f,q-1}\Delta P_{i,q}|}{\sum_{i=1}^{N_{f,q}} (S_{i,f,q}P_{i,q} + S_{i,f,q-1}P_{i,q-1})/2}, \quad \text{eq.(4)}$$

where  $S_{i,f,q}$  is the number of shares of firm  $i$  held by mutual fund investors  $f$  at quarter  $q$ ,  $P_{i,q}$  is the stock price of firm  $i$  at quarter  $q$ ,  $N_{f,q}$  is the number of firms invested in by investor  $f$  at quarter  $q$ . Then the annual average churn rate of investor  $f$  in year  $t$ ,  $ACR_{f,t}$ , is the mean of the quarterly estimates of  $CR_{f,q}$  during a year.

The proxy of mutual fund investment horizon for firm  $i$  in year  $t$  is the weighted average churn rate of the firm's all mutual fund investors:

$$WACR_{i,t} = \sum_{f=1}^{M_{i,t}} w_{i,f,t} ACR_{f,t}$$

eq.(5)

where  $w_{i,f,t}$  is the proportion of shares of firm  $i$  held by investor  $f$  in year  $t$ , and  $M_{i,t}$  is the number of mutual fund investors of firm  $i$  in year  $t$ .

Following Attig et al. (2012), I use an interaction item of mutual fund ownership (MF and MFMV) and mutual fund investment horizon (WACR) to test the effects of WACR. The fixed-effect model is specified as follows:

$$DIV_{i,t} = \alpha_{1,i} + \alpha_2 MF_{i,t-1} + \alpha_3 MF_{i,t-1} * WACR_{i,t-1} + \alpha_4 Control_{i,t-1} + Dummy (year) + \varepsilon_{i,t}$$

eq.(6)

As the main analysis suggests that BIS institutions do not influence the dividend policy, I only use the investment horizon of mutual funds here. Eq.(6) is also run by replacing DIV and MF by DIVDM and MFMV, respectively. The regression results of eq.(6) for the full sample (columns 1-4), SOE sample (columns 5-8), and Non-SOE sample (columns 9-12) are presented in Table 11. All independent variables are lagged by one year. The estimated coefficients on the interaction term MF\*WACR (MFMV\*WACR) are all significantly negative in the full sample and SOE sample, with the coefficients on mutual fund ownership (MF and MFMV) remaining

significantly positive. The results suggesting that a shorter investment horizon (higher churn rate) will reduce the effects of mutual fund ownership on dividend policy, which is consistent with the extant literature that institutional investors with longer investment horizons are more likely to play a role in corporate governance. For non-SOEs, the results are consistent when DIVDM is the dependent variable (columns 11 and 12). When DIV is the dependent variable, the estimated coefficients on the interaction term are not significant but do have negative signs (columns 9 and 10).

#### *6.4 Large mutual fund ownership*

(Insert Table 12)

The roles of institutional investors may be limited if the shareholding volume is too small. Hence I select only the mutual fund investors with large shareholdings to construct the mutual fund ownership. Similar to the approach used by Chen et.al (2007) and Li et.al (2011), a firm's large mutual fund ownership (LMF) is defined as the aggregate shareholdings of those mutual fund investors who each own at least 1% or more of the firm's total number of shares. By using LMF to replace the MF (MFMV) in model eq.(2) and eq.(3), I run the firm-fixed effects regressions and change regressions for the full sample, the SOE sample and the non-SOE sample separately and the results are provided in Table 12. The coefficients on LMF are all positively significant in the full sample and SOEs, consistent with the corresponding results presented in table 4 and table 5 when I use all the mutual funds shareholdings as the explanatory variable.

#### *6.5 Another measure of dividend policy: dividend yield*

(Insert Table 13)

As cash dividend per share (DIV) may change with inflation every year and may not reflect corporate dividend policy properly, to further alleviate the concern and consolidate my findings, I introduce dividend yield as a third measure of dividend policy to repeat the analysis for the full sample, SOE sample and non-SOE sample. Since dividend payout ratios (cash dividend over earnings) sometimes are negative due to negative annual earnings, I use dividend yield defined as the amount of cash dividends divided by book assets, following Grinstein and Michaely (2005) and Li and Zhao (2008). DIVA is used to replace DIV in the fixed-effect model of eq.(2) and the change model of eq.(3). The results are provided in Table 13 (columns 1-4 for the full sample, columns 5-8 for SOE sample and columns 9-12 for the non-SOE sample). The coefficients on MF and MFMV are all significantly positive in the full sample and the SOE sample, while they are not significant in the non-SOE sample. For BIS institutions, none of the coefficients in the full sample and the SOE sample is significant, while the coefficients are significant in the non-SOE sample for the change models. These findings are consistent with the results when DIV and DIVDM are used as dependent variables. Mutual fund investors can lead firms to increase dividend payments, mainly in SOEs, while the BIS institutions have no effects on SOEs but do seem to have some influence on the dividend policy for non-SOEs.

## Chapter 7. Conclusions

By investigating the empirical relation between institutional investors and dividend policies in China from 2003 to 2011, I find that mutual fund ownership can cause firms to increase cash dividends and to initiate cash dividends, especially for those firms that are more likely to suffer from agency problems (State-owned enterprises and firms with relatively high free cash flows). However, the other financial institutional investors including banks, insurance companies and securities companies do not appear to have the same effects. Furthermore, changes of dividend policies of listed firms do not cause the changes of mutual fund ownership, but do cause the changes of BIS institutional ownership.

My findings suggest that different categories of institutional investors may have different effects on the dividend policy of the firms that they invest in. To the best of my knowledge, my study is the first time to distinguish between the differential effects of institutional investors on firms' dividend policies. Based on a variety of tests, my study contributes to the literature by carefully examining the causality effects of institutional investors' stock holdings on dividend payments.

Since the agency costs theory indicates that payment of cash dividends can reduce a firm's agency costs of free cash flow, I test directly whether institutional ownership and cash dividend can reduce agency costs. My empirical results support Jensen's agency costs theory, and show that mutual funds can reduce agency costs and improve firm performance. To the best of my knowledge, my thesis is the first to establish a direct link between different categories of institutional investors and dividend payments in China. This research provides evidence consistent with the monitoring



effects of institutional investors on corporate governance and the agency costs theory.

## Appendix: Variable Definitions

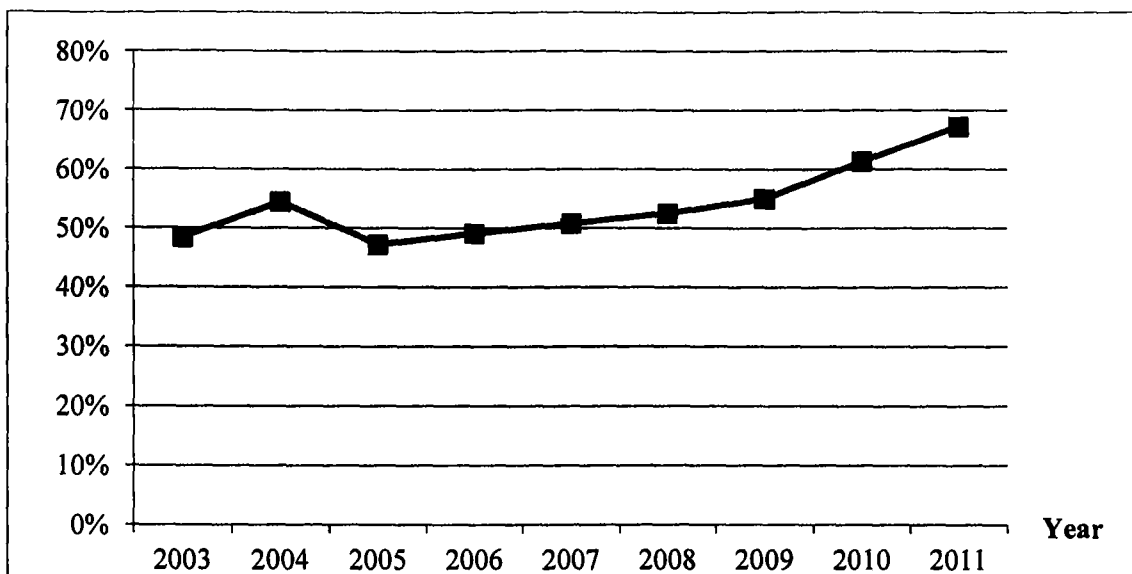
Variable	Sign	Definition
Institutional ownership	MF, BIS	Number of shares held by institutional investors over a firm's total number of shares.
Institutional ownership	MFMV, BISMV	Market value of institutional shareholding over a firm's total market value. A firm's total market value is calculated as sum of the market value of equity and book value of debt. Values of non-tradable shares are calculated as net assets per share multiplied by number of non-tradable shares.
Mutual fund investment horizon	WACR	Weighted average churn rate of a firm's all mutual fund investors. See the details in chapter 6.3.
Large mutual fund ownership	LMF	Aggregate ownership of a firm's mutual fund investors who each hold at least 1% of the firm's total number of shares.
Dividend payout	DIV	Cash dividend per share paid in a year.
Dividend dummy	DIVDM	Dummy variable which equals one if a firm pays cash dividend ( $DIV > 0$ ) and zero otherwise.
Dividend to assets	DIVA	Dividend per share over book assets per share.
Free cash flow	FCF	Net operating cash flow (calculated as earnings before interests, taxes and depreciation, or EBITDA, less capital expenditure) over total assets.
Free cash flow dummy	FCFDM	Constructed from running a cross-sectional regression of firms' free cash flows (FCF) on Tobin's Q for each year and each industry. If the regression residual for a firm is positive then FCFDM equals one, and zero otherwise.
Growth opportunity	GROWTH	Annual percentage change in sales.
Ownership Concentration	HERF10	Sum of the squared percentage of shares held by the largest 10 shareholders.
State owned enterprise	SOE	A dummy variable that equals one if the ultimate controlling shareholder of a firm is the central government, local government or government agency, zero otherwise.
Earnings per share	EPS	Net profits over total number of shares.
Log of assets	LNASSET	Natural logarithm of total assets.
Managerial ownership	MAO	Shares held by senior managers over the firm's total number of shares.
Leverage	LEVE	Total liabilities over total assets.
Return on assets	ROA	Net profit over total assets.

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Return on assets	ROA	Net profit over total assets.
Firm-performance volatility	VOLATILITY	The standard deviation of daily stock returns during a year.
Agency cost	AC	Operating expense scaled by annual sales (industry-adjusted). Industry classification is according to the two-digit industry code provided by CSMAR
Legal person ownership	LPO	Shares held by domestic corporations and other entities over total number of shares.
Foreign ownership	FORO	Sum of B-shares, H-shares and non-tradable foreign founders' shares divided by the total number of shares.
Tangibility	TANG	The net fixed assets plus inventory over total assets.
Log of sales	SIZE	Natural logarithm of annual sales.
Adjusted Stock returns	ADJR	Annual stock returns minus the annual market index return. The market index is either Shanghai or Shenzhen composite market index, depending on the location of listing.
Duality of CEO and chairman	DUA	A dummy variable equals one if CEO and chairman are separate individuals, zero otherwise.
Independent directors	INDEP	Number of independent directors on the board.
Board size	DIRECTOR	Number of directors on the board.
Index dummy	INDEX	A dummy variable which equals one if the firm is included in either the Shanghai 180 Index or the Shenzhen Composite Index, zero otherwise.
Proportion of tradable A-shares	PROA	Number of tradable A-shares over the total number of shares.

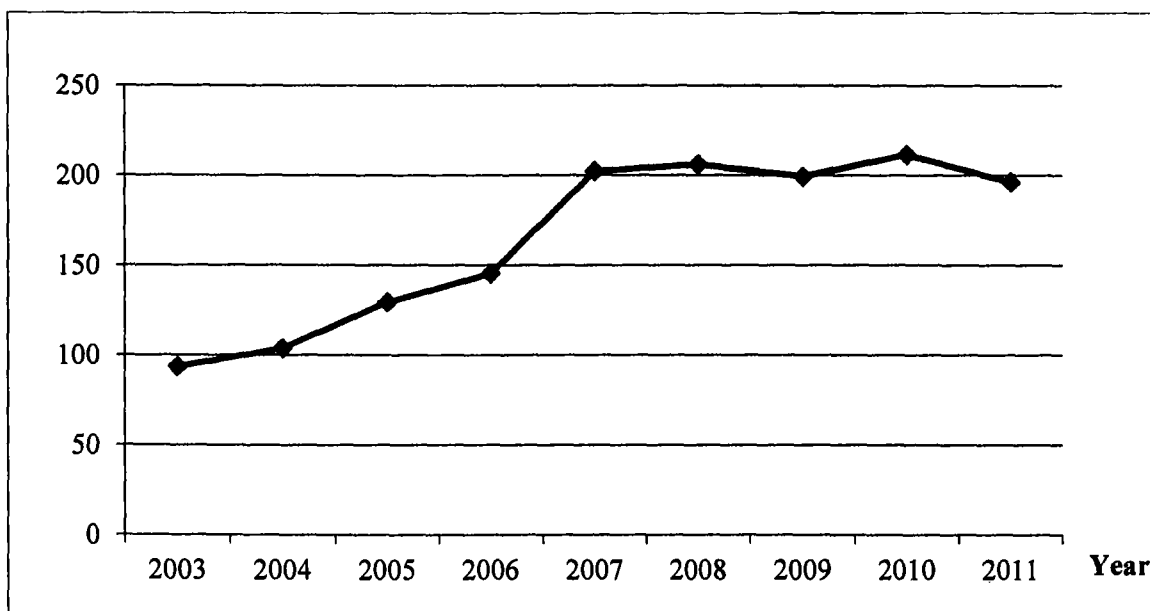
### Figure 1 Cash dividend payments of listed firms in China

Panel A plots the annual number of listed firms with cash dividends as a percentage of all listed firms on the Shanghai and Shenzhen stock exchanges from 2003 to 2011. Panel B plots the average amount of cash dividend per firm in each year from 2003 to 2011.

Panel A: The percentage of listed firms paying cash dividends



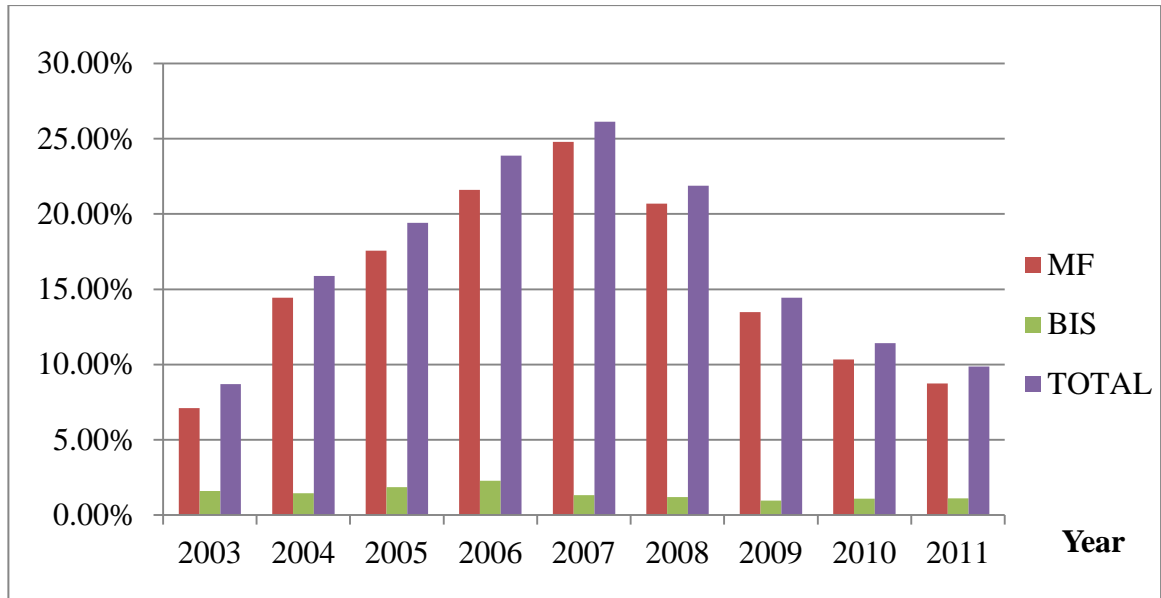
Panel B: The average cash dividend (in million CNY) per firm per year



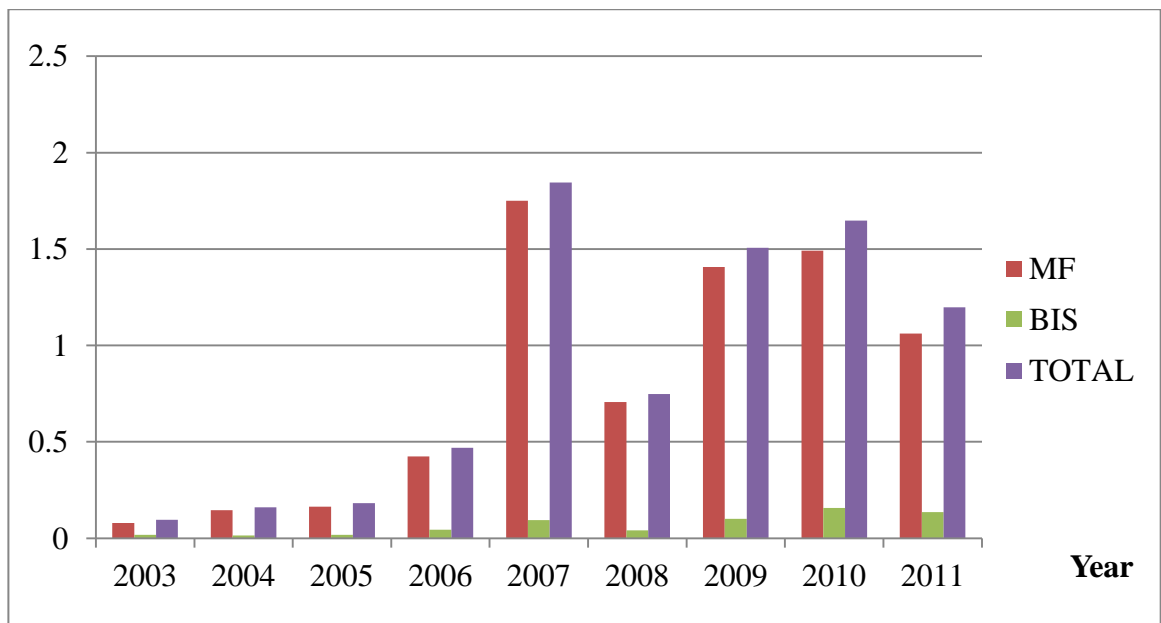
## Figure 2 Institutional ownership in China

Panel A shows the annual percentage stock ownership of institutional investors, which is the market value of stocks held by institutional investors over the market value of tradable A-shares of listed firms, from 2003 to 2011. Panel B shows the annual total market value (in trillion CNY) of institutional ownership from 2003 to 2011. MF refers to domestic mutual funds and QFII. BIS refers to other institutional investors including banks, insurance companies and securities companies. Total is the sum of MF and BIS.

Panel A: Percentage institutional ownership



Panel B: The market value of institutional ownership (in trillion CNY)



**Table 1 Descriptive statistics**

The table shows descriptive statistics of the main firm-year variables for the period from 2003 to 2011. MF and BIS are the percentages of shares held by mutual funds and BIS institutional investors, respectively, over the firm's total number of shares. MFMV and BISMV is market value of mutual funds and BIS institutional shareholdings, respectively, over the total market value of a firm at year end. DIV is cash dividend per share. FCF is the net operating cash flow over total assets. GROWTH is the annual percentage change in sales. HERF10 is the sum of the squared percentage of shares held by the top ten shareholders. SOE is a dummy variable that equals one if a firm's ultimate controlling shareholder is the government or government agency, and zero otherwise. EPS is net profits over total number of shares. LNASSET is natural logarithm of total assets. MAO is number of shares owned by senior managers over the firm's total number of shares. LEVE is total liabilities over total assets. ROA is net profit over total assets. VOLATILITY is the standard deviation of daily stock returns during a year. AC is the industry-adjusted expense ratio (annual operating expenses scaled by sales). The other variables are defined in appendix. Panel A shows the descriptive statistics of the main variables, where \* refers to the number of non-zero observations. Panel B shows the mean values of DIV, MF, BIS and AC in subsamples divided in two dimensions, SOEs versus non-SOEs and dividend-paying versus non-dividend-paying firms. The null hypothesis that the difference in subsample means is zero is tested via a two-tailed t-test. The t-statistics of SOEs versus non-SOEs are reported in the rows and those of dividend-paying versus non-dividend-paying firms are in the columns. \*, \*\*, \*\*\* in Panel B indicate the 10%, 5%, and 1% significance levels, respectively. All the values are rounded to three decimal places.

*Panel A Descriptive statistics of main variables*

Variables	Number of observations	Mean	Standard deviation	Minimum	25th percentile	Median	75th percentile	Maximum
MF	9,816*	0.056	0.084	0.000	0.002	0.018	0.076	0.665
BIS	4,552*	0.015	0.025	0.000	0.004	0.009	0.019	0.584
MFMV	9,816*	0.057	0.094	0.000	0.001	0.014	0.070	0.669
BISMV	4,552*	0.015	0.024	0.000	0.003	0.008	0.019	0.491
LMF	4,247*	0.062	0.058	0.010	0.021	0.044	0.082	0.509
WACR	9,816*	0.066	0.099	0.000	0.002	0.021	0.090	0.798
DIV	6,934*	0.156	0.173	0.004	0.056	0.100	0.200	3.997
DIVDM	13,105	0.529	0.499	0.000	0.000	1.000	1.000	1.000
DIVA	6,934*	0.021	0.021	0.000	0.007	0.014	0.026	0.262
FCF	13,105	0.047	0.084	-0.220	0.003	0.047	0.094	0.280
GROWTH	13,105	0.246	0.628	-0.786	0.001	0.156	0.342	4.593
HERF10	13,105	0.185	0.127	0.015	0.086	0.153	0.261	0.563
SOE	13,105	0.599	0.490	0.000	0.000	1.000	1.000	1.000
EPS	13,105	0.233	0.439	-1.405	0.050	0.182	0.408	1.820
LNASSET	13,105	21.494	1.182	18.744	20.700	21.377	22.156	25.121
MAO	13,105	0.017	0.067	0.000	0.000	0.000	0.000	0.436
LEVE	13,105	0.523	0.276	0.059	0.358	0.512	0.647	2.050

ROA	13,105	0.026	0.082	-0.432	0.010	0.032	0.060	0.211
VOLATILITY	13,105	0.032	0.029	0.000	0.024	0.029	0.036	1.636
AC	12,722	-0.011	0.141	-0.468	-0.083	0.002	0.072	0.345
LPO	12,722	0.023	0.080	0.000	0.000	0.000	0.000	0.471
FORO	12,722	0.036	0.103	0.000	0.000	0.000	0.000	0.477
TANG	12,722	0.457	0.180	0.049	0.327	0.455	0.589	0.855
SIZE	12,722	20.854	1.577	7.125	19.962	20.835	21.719	28.550
ADJR	12,722	0.130	0.657	-1.102	-0.202	-0.018	0.270	3.013
DUA	12,722	0.850	0.357	0.000	1.000	1.000	1.000	1.000
INDEP	12,722	0.356	0.054	0.000	0.333	0.333	0.375	0.800
DIRECTOR	12,722	9.319	1.968	3.000	9.000	9.000	10.000	19.000

*Panel B Mean values of key variables in double sorted subsamples*

MEAN VALUES		SOEs	Non-SOEs	Row T-TEST	ALL
DIV	Firms without dividend	0.000	0.000		0.000
	Firms with dividend	0.155	0.157	-0.22	0.156
	Column T-TEST				
	ALL	0.085	0.078	2.86***	0.082
MF	Firms without dividend	0.018	0.018	-0.21	0.018
	Firms with dividend	0.062	0.066	-1.51	0.063
	Column T-TEST	-28.08***	-23.65***		-36.71***
	ALL	0.042	0.042	0.31	0.042
BIS	Firms without dividend	0.004	0.003	3.15***	0.004
	Firms with dividend	0.006	0.007	-1.04	0.006
	Column T-TEST	-4.35***	-11.39***		-9.11***
	ALL	0.005	0.005	2.19**	0.005
AC	Firms without dividend	0.036	-0.010	11.76***	0.016
	Firms with dividend	-0.020	-0.060	11.69***	-0.035
	Column T-TEST	19.11***	11.89***		20.84***
	ALL	0.005	-0.035	15.21***	-0.011
OBSERVATIONS	Firms without dividend	3,536	2,635		6,171
	Firms with dividend	4,310	2,624		6,934
	ALL	7,846	5,259		13,105

**Table 2 Correlation analysis**

This table presents Pearson correlation coefficients. DIV is cash dividend per share. MF and BIS are the numbers of shares held by mutual funds and BIS institutional investors respectively over the firm's total number of shares. MFMV and BISMV are market values of mutual funds and BIS institutional shareholdings respectively over the total market value of a firm at year end. The other variables are defined in Table 1. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels.

Variable	DIV	MF	BIS	MFMV	BISMV	FCF	GROWTH	HERF10	SOE	EPS	LNASSET	MAO	LEVE	ROA
MF	0.311***													
BIS	0.064***	0.150***												
MFMV	0.355***	0.917***	0.127***											
BISMV	0.102***	0.164***	0.946***	0.188***										
FCF	0.247***	0.189***	0.028***	0.213***	0.054***									
GROWTH	0.071***	0.223***	0.012	0.072***	0.019**	0.074***								
HERF10	0.192***	0.062***	-0.002	-0.015*	0.020**	0.094***	0.094***							
SOE	0.024***	-0.063***	0.018**	-0.029***	-0.007	0.079***	-0.012	0.258***						
EPS	0.553***	0.003	0.104***	0.443***	0.135***	0.263***	0.222***	0.158***	0.011					
LNASSET	0.245***	0.439***	0.096***	0.182***	0.045***	0.083***	0.085***	0.270***	0.286***	0.345***				
MAO	0.115***	0.280***	0.004	0.112***	0.042***	-0.052***	0.015*	-0.074***	-0.282***	0.129***	-0.114***			
LEVE	-0.210***	0.048***	-0.037***	-0.160***	-0.089***	-0.157***	-0.006	-0.094***	0.018**	-0.295***	0.017*	-0.192***		
ROA	0.362***	-0.085***	0.080***	0.326***	0.118***	0.297***	0.214***	0.137***	0.002	0.791***	0.215***	0.111***	-0.464***	
VOLATILITY	-0.045***	0.291***	-0.023**	0.007	-0.016*	-0.002	0.154***	-0.010	-0.038***	-0.004	-0.058***	0.002	0.022**	0.019**



**Table 3 Contemporary relation between institutional ownership and dividend policy**

The table presents the results of the regression models that use institutional ownerships to explain dividend policy. The model of Tobit regression (results shown in columns 1-6) is specified as:  $DIV_{i,t} = \alpha_1 + \alpha_2 MF_{i,t}(BIS_{i,t}) + \alpha_3 Control_{i,t} + Dummy(industry, year) + \varepsilon_{i,t}$ ; and the model of Fama-MacBeth type regression (results shown in columns 7-12) is specified as:  $DIV_i = \alpha_1 + \alpha_2 MF_i(BIS_i) + \alpha_3 Control_i + Dummy(industry) + \varepsilon_i$ . In Panel A, the dependent variable is the cash dividend per share DIV, and in Panel B, the dependent variable is the dummy DIVDM, which is coded one if the firm pays cash dividends in a year and zero otherwise. The variable definitions are the same as those in Table 1. The numbers in parentheses are the t-statistics. For the Fama-MacBeth regressions, the Newey-West (1987) t-statistics are reported. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels, respectively. Inclusion of industry dummies and year dummies are indicated by “YES” or “NO”.

*Panel A Relation of institutional ownerships and DIV*

	Tobit						Fama-MacBeth					
	(1) DIV	(2) DIV	(3) DIV	(4) DIV	(5) DIV	(6) DIV	(7) DIV	(8) DIV	(9) DIV	(10) DIV	(11) DIV	(12) DIV
MF	0.080*** (3.47)	0.082*** (3.53)					0.264* (2.26)	0.265* (2.23)				
BIS	0.046 (0.47)		0.080 (0.83)				0.054 (0.74)		0.133* (1.87)			
MFMV				0.088*** (4.26)	0.090*** (4.41)					0.291*** (3.71)	0.294*** (3.63)	
BISMV				0.089 (0.89)		0.143 (1.44)				0.101 (1.37)		0.292*** (4.95)
FCF	0.144*** (6.38)	0.144*** (6.38)	0.151*** (6.68)	0.143*** (6.34)	0.143*** (6.34)	0.151*** (6.68)	0.171*** (4.49)	0.171*** (4.46)	0.187*** (5.34)	0.159*** (4.28)	0.159*** (4.28)	0.186*** (5.29)
GROWTH	-0.014*** (-4.70)	-0.014*** (-4.70)	-0.014*** (-4.74)	-0.014*** (-4.74)	-0.014*** (-4.75)	-0.014*** (-4.74)	-0.008* (-2.34)	-0.007* (-2.30)	-0.007* (-2.13)	-0.007* (-2.18)	-0.007* (-2.14)	-0.007* (-2.13)
HERF10	0.135*** (9.49)	0.135*** (9.48)	0.125*** (8.98)	0.132*** (9.42)	0.132*** (9.44)	0.125*** (8.96)	0.112*** (8.18)	0.112*** (8.09)	0.099*** (6.52)	0.108*** (6.09)	0.108*** (6.19)	0.099*** (6.23)
SOE	-0.004 (-1.07)	-0.004 (-1.07)	-0.004 (-1.05)	-0.004 (-1.05)	-0.004 (-1.05)	-0.004 (-1.05)	-0.006 (-1.52)	-0.006 (-1.50)	-0.005 (-1.44)	-0.005 (-1.40)	-0.005 (-1.39)	-0.005 (-1.42)
EPS	0.292*** (38.28)	0.292*** (38.28)	0.297*** (39.98)	0.291*** (38.56)	0.291*** (38.55)	0.297*** (39.97)	0.214*** (31.10)	0.214*** (31.52)	0.232*** (36.42)	0.210*** (31.11)	0.210*** (31.13)	0.231*** (36.13)
LNASSET	0.034*** (18.02)	0.034*** (18.05)	0.035*** (18.87)	0.035*** (18.38)	0.035*** (18.39)	0.036*** (18.91)	0.007*** (4.58)	0.007*** (4.53)	0.009*** (4.57)	0.007*** (3.73)	0.007*** (3.75)	0.009*** (4.51)
MAO	0.182*** (7.42)	0.182*** (7.41)	0.182*** (7.41)	0.177*** (7.19)	0.177*** (7.18)	0.182*** (7.39)	0.163** (2.52)	0.164** (2.50)	0.172** (2.59)	0.150** (2.39)	0.151** (2.35)	0.170** (2.62)
LEVE	-0.232*** (-22.36)	-0.232*** (-22.36)	-0.233*** (-22.42)	-0.229*** (-22.01)	-0.229*** (-22.05)	-0.232*** (-22.36)	-0.044*** (-3.64)	-0.044*** (-3.64)	-0.045*** (-3.79)	-0.041** (-3.33)	-0.041** (-3.34)	-0.045*** (-3.74)
ROA	0.437*** (7.14)	0.438*** (7.16)	0.454*** (7.42)	0.414*** (6.72)	0.415*** (6.76)	0.451*** (7.36)	-0.463*** (-16.35)	-0.464*** (-16.26)	-0.502*** (-11.77)	-0.471*** (-15.06)	-0.471*** (-15.06)	-0.503*** (-11.75)
VOLATILITY	-0.557***	-0.557***	-0.575***	-0.553***	-0.554***	-0.574***	-0.405**	-0.417**	-0.434*	-0.408**	-0.421**	-0.431*

	(-4.36)	(-4.36)	(-4.47)	(-4.32)	(-4.33)	(-4.47)	(-2.44)	(-2.40)	(-2.21)	(-2.53)	(-2.48)	(-2.22)
INDUSTRY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
OBSERVATIONS	13,105	13,105	13,105	13,105	13,105	13,105	13,105	13,105	13,105	13,105	13,105	13,105
(PSEUDO) R <sup>2</sup>	0.399	0.399	0.396	0.400	0.400	0.396	0.406	0.406	0.396	0.412	0.412	0.397

*Panel B Relation of institutional ownerships and DIVDM*

	Probit						Fama-MacBeth					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM
MF	1.194*** (5.31)	1.184*** (5.29)					0.740*** (4.89)	0.756*** (5.06)				
BIS	-0.358 (-0.49)		-0.005 (-0.01)				0.698 (1.76)		1.000** (2.35)			
MFMV				0.757*** (3.58)	0.742*** (3.53)					0.529*** (5.02)	0.550*** (5.20)	
BISMV				-0.506 (-0.64)		-0.191 (-0.24)				0.730* (1.87)		1.101** (2.56)
FCF	0.358** (2.01)	0.359** (2.01)	0.433** (2.44)	0.386** (2.17)	0.386** (2.17)	0.433** (2.44)	0.160*** (3.51)	0.159** (3.51)	0.224*** (5.72)	0.160*** (3.46)	0.159*** (3.42)	0.221*** (5.75)
GROWTH	-0.109*** (-4.78)	-0.108*** (-4.77)	-0.111*** (-4.87)	-0.110*** (-4.83)	-0.110*** (-4.83)	-0.111*** (-4.87)	-0.026 (-1.67)	-0.026 (-1.65)	-0.026 (-1.59)	-0.026 (-1.61)	-0.026 (-1.58)	-0.026 (-1.59)
HERF10	0.803*** (6.85)	0.803*** (6.85)	0.710*** (6.12)	0.748*** (6.42)	0.746*** (6.41)	0.710*** (6.12)	0.350*** (11.12)	0.345*** (11.26)	0.298*** (12.86)	0.311*** (11.78)	0.309*** (12.30)	0.292*** (12.64)
SOE	-0.006 (-0.21)	-0.006 (-0.22)	-0.007 (-0.24)	-0.006 (-0.19)	-0.006 (-0.19)	-0.007 (-0.24)	-0.018** (-2.89)	-0.018** (-2.93)	-0.018** (-2.72)	-0.017** (-2.71)	-0.017** (-2.75)	-0.018** (-2.72)
EPS	1.421*** (16.69)	1.421*** (16.69)	1.532*** (18.48)	1.467*** (17.32)	1.466*** (17.31)	1.533*** (18.49)	0.416*** (7.05)	0.417*** (7.01)	0.474*** (7.21)	0.430*** (6.90)	0.431*** (6.88)	0.473*** (7.19)
LNASSET	0.376*** (23.30)	0.376*** (23.31)	0.393*** (24.76)	0.385*** (24.13)	0.385*** (24.13)	0.393*** (24.80)	0.076*** (17.83)	0.076*** (17.34)	0.084*** (20.29)	0.081*** (20.53)	0.081*** (20.35)	0.085*** (19.65)
MAO	1.797*** (7.72)	1.798*** (7.73)	1.801*** (7.74)	1.770*** (7.59)	1.769*** (7.59)	1.801*** (7.74)	0.773*** (4.61)	0.771*** (4.52)	0.810*** (4.55)	0.750*** (4.59)	0.750*** (4.43)	0.805*** (4.60)
LEVE	-1.741*** (-21.64)	-1.741*** (-21.64)	-1.759*** (-21.92)	-1.732*** (-21.47)	-1.731*** (-21.46)	-1.760*** (-21.92)	-0.252*** (-7.80)	-0.253*** (-7.81)	-0.254*** (-8.01)	-0.245*** (-7.48)	-0.248*** (-7.54)	-0.253*** (-7.93)
ROA	4.854*** (8.61)	4.849*** (8.61)	4.820*** (8.55)	4.752*** (8.43)	4.741*** (8.41)	4.825*** (8.55)	-0.186 (-0.81)	-0.188 (-0.81)	-0.292 (-1.10)	-0.233 (-0.96)	-0.231 (-0.95)	-0.295 (-1.11)
VOLATILITY	-4.551*** (-4.37)	-4.548*** (-4.37)	-4.658*** (-4.50)	-4.615*** (-4.41)	-4.612*** (-4.40)	-4.659*** (-4.51)	-3.231** (0.160)	-3.271** (0.159)	-3.217* (0.224)	-3.242* (0.160)	-3.280* (0.159)	-3.218* (0.221)
INDUSTRY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
OBSERVATIONS	13,105	13,105	13,105	13,105	13,105	13,105	13,105	13,105	13,105	13,105	13,105	13,105
(PSEUDO) R <sup>2</sup>	0.334	0.334	0.332	0.333	0.333	0.332	0.336	0.335	0.329	0.335	0.334	0.329

**Table 4 Effects of institutional ownerships on dividend policy**

The table shows the results of the regression models that use institutional ownership to explain the dividend policy in the next period. The firm-fixed effect regression model (results in columns 1-6) is specified as:  $DIV_{i,t} = \alpha_{1,i} + \alpha_2 MF_{i,t-1} (BIS_{i,t-1}) + \alpha_3 Control_{i,t-1} + Dummy (year) + \varepsilon_{i,t}$ , and the regression model of changes in variables (results in columns 7-12) is specified as:  $\Delta DIV_{i,t} = \alpha_1 + \alpha_2 \Delta MF_{i,t-1} (\Delta BIS_{i,t-1}) + \alpha_3 \Delta Control_{i,t-1} + Dummy (industry, year) + \varepsilon_{i,t}$ . In Panel A, the dependent variable is the cash dividend per share DIV, and in Panel B, the dependent variable is the dummy DIVDM, which is coded one if the firm pays cash dividends in a year and zero otherwise. The variable definitions are the same as those in Table 1. The numbers in parentheses are t-statistics. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels, respectively. Inclusion of industry dummies and year dummies are indicated by “YES” or “NO”.

*Panel A Effects of institutional ownerships on DIV*

	Fixed effects						Changes					
	(1) DIV	(2) DIV	(3) DIV	(4) DIV	(5) DIV	(6) DIV	(7) DIV	(8) DIV	(9) DIV	(10) DIV	(11) DIV	(12) DIV
MF	0.130*** (6.22)	0.130*** (6.22)					0.072*** (3.08)	0.072*** (3.08)				
BIS	-0.011 (-0.15)		0.004 (0.05)				0.003 (0.04)		0.011 (0.13)			
MFMV				0.115*** (6.38)	0.115*** (6.42)					0.043** (2.24)	0.044** (2.29)	
BISMV				0.044 (0.54)		0.073 (0.90)				0.073 (0.82)		0.083 (0.94)
FCF	0.078*** (5.32)	0.078*** (5.33)	0.083*** (5.66)	0.078*** (5.33)	0.078*** (5.33)	0.083*** (5.65)	0.025** (2.00)	0.025** (2.00)	0.026** (2.09)	0.025** (2.03)	0.025** (2.03)	0.026** (2.08)
GROWTH	0.004** (2.27)	0.004** (2.27)	0.004** (2.11)	0.004** (2.16)	0.004** (2.16)	0.004** (2.10)	0.000 (0.18)	0.000 (0.18)	0.000 (0.17)	0.000 (0.16)	0.000 (0.16)	0.000 (0.18)
HERF10	0.068*** (3.58)	0.068*** (3.58)	0.058*** (3.08)	0.063*** (3.36)	0.064*** (3.39)	0.057*** (3.04)	0.026 (0.98)	0.026 (0.98)	0.022 (0.83)	0.022 (0.83)	0.024 (0.87)	0.021 (0.78)
SOE	-0.006 (-1.22)	-0.006 (-1.22)	-0.006 (-1.26)	-0.006 (-1.23)	-0.006 (-1.23)	-0.006 (-1.26)	-0.008 (-1.29)	-0.008 (-1.29)	-0.008 (-1.29)	-0.008 (-1.29)	-0.008 (-1.30)	-0.008 (-1.28)
EPS	0.064*** (11.70)	0.064*** (11.71)	0.070*** (13.05)	0.064*** (11.69)	0.064*** (11.70)	0.070*** (13.03)	-0.007 (-1.34)	-0.007 (-1.34)	-0.005 (-0.98)	-0.007 (-1.27)	-0.007 (-1.27)	-0.005 (-0.99)
LNASSET	-0.012*** (-4.38)	-0.012*** (-4.38)	-0.009*** (-3.39)	-0.011*** (-3.99)	-0.011*** (-4.01)	-0.009*** (-3.36)	-0.004 (-0.84)	-0.004 (-0.84)	-0.003 (-0.62)	-0.003 (-0.68)	-0.003 (-0.71)	-0.003 (-0.59)
MAO	-0.064 (-1.01)	-0.064 (-1.01)	-0.069 (-1.09)	-0.065 (-1.02)	-0.065 (-1.02)	-0.069 (-1.09)	-0.081 (-1.36)	-0.081 (-1.36)	-0.081 (-1.35)	-0.081 (-1.35)	-0.081 (-1.36)	-0.080 (-1.34)
LEVE	-0.010 (-1.26)	-0.010 (-1.26)	-0.010 (-1.33)	-0.008 (-1.09)	-0.009 (-1.10)	-0.010 (-1.32)	0.007 (0.77)	0.007 (0.77)	0.007 (0.77)	0.008 (0.83)	0.008 (0.82)	0.008 (0.78)
ROA	-0.130*** (-5.06)	-0.130*** (-5.07)	-0.145*** (-5.64)	-0.131*** (-5.09)	-0.131*** (-5.09)	-0.145*** (-5.64)	0.024 (1.06)	0.024 (1.06)	0.019 (0.85)	0.024 (1.03)	0.024 (1.04)	0.019 (0.84)
VOLATILITY	-0.025	-0.025	-0.028	-0.022	-0.022	-0.027	0.005	0.005	0.004	0.006	0.006	0.004

	(-0.71)	(-0.71)	(-0.79)	(-0.62)	(-0.63)	(-0.78)	(0.20)	(0.20)	(0.16)	(0.23)	(0.22)	(0.16)
INDUSTRY	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
OBSERVATIONS	11,059	11,059	11,059	11,059	11,059	11,059	9,300	9,300	9,300	9,300	9,300	9,300
R <sup>2</sup>	0.043	0.043	0.041	0.043	0.043	0.041	0.005	0.005	0.004	0.005	0.005	0.004

*Panel B Effects of institutional ownerships on DIVDM*

	Fixed effects						Changes					
	(1) DIVDM	(2) DIVDM	(3) DIVDM	(4) DIVDM	(5) DIVDM	(6) DIVDM	(7) DIVDM	(8) DIVDM	(9) DIVDM	(10) DIVDM	(11) DIVDM	(12) DIVDM
MF	0.316*** (4.42)	0.318*** (4.45)					0.229*** (2.60)	0.232*** (2.63)				
BIS	0.230 (0.88)		0.267 (1.02)				0.382 (1.18)		0.407 (1.25)			
MFMV				0.275*** (4.47)	0.280*** (4.56)					0.177** (2.44)	0.182** (2.51)	
BISMV				0.388 (1.40)		0.458* (1.66)				0.425 (1.27)		0.467 (1.40)
FCF	0.098** (1.97)	0.098** (1.97)	0.110** (2.21)	0.098** (1.97)	0.099** (1.98)	0.110** (2.20)	0.001 (0.03)	0.001 (0.02)	0.005 (0.10)	0.001 (0.02)	0.001 (0.03)	0.004 (0.09)
GROWTH	0.004 (0.74)	0.004 (0.75)	0.004 (0.63)	0.004 (0.66)	0.004 (0.67)	0.004 (0.63)	-0.005 (-0.92)	-0.005 (-0.93)	-0.005 (-0.93)	-0.005 (-0.94)	-0.005 (-0.95)	-0.005 (-0.93)
HERF10	0.458*** (7.10)	0.460*** (7.14)	0.435*** (6.76)	0.447*** (6.93)	0.451*** (7.01)	0.432*** (6.71)	0.288*** (2.82)	0.294*** (2.88)	0.275*** (2.70)	0.279*** (2.73)	0.286*** (2.80)	0.274*** (2.68)
SOE	-0.013 (-0.73)	-0.013 (-0.74)	-0.013 (-0.77)	-0.013 (-0.74)	-0.013 (-0.75)	-0.013 (-0.76)	-0.031 (-1.27)	-0.031 (-1.28)	-0.031 (-1.26)	-0.031 (-1.27)	-0.031 (-1.28)	-0.031 (-1.27)
EPS	0.161*** (8.61)	0.161*** (8.61)	0.176*** (9.58)	0.160*** (8.60)	0.160*** (8.61)	0.175*** (9.55)	-0.016 (-0.79)	-0.016 (-0.80)	-0.010 (-0.48)	-0.016 (-0.81)	-0.016 (-0.81)	-0.010 (-0.50)
LNASSET	-0.016* (-1.69)	-0.016* (-1.68)	-0.009 (-0.96)	-0.013 (-1.35)	-0.013 (-1.40)	-0.009 (-0.91)	-0.018 (-1.09)	-0.018 (-1.11)	-0.015 (-0.90)	-0.016 (-0.96)	-0.017 (-1.01)	-0.015 (-0.87)
MAO	0.290 (1.35)	0.291 (1.35)	0.278 (1.29)	0.289 (1.34)	0.289 (1.34)	0.279 (1.29)	0.355 (1.57)	0.354 (1.57)	0.356 (1.58)	0.357 (1.58)	0.354 (1.57)	0.359 (1.59)
LEVE	-0.080*** (-3.04)	-0.080*** (-3.04)	-0.082*** (-3.10)	-0.077*** (-2.91)	-0.077*** (-2.92)	-0.081*** (-3.07)	-0.016 (-0.43)	-0.016 (-0.43)	-0.016 (-0.43)	-0.013 (-0.36)	-0.014 (-0.37)	-0.015 (-0.41)
ROA	-0.213** (-2.43)	-0.213** (-2.42)	-0.249*** (-2.84)	-0.215** (-2.45)	-0.214** (-2.44)	-0.248*** (-2.83)	0.036 (0.42)	0.038 (0.44)	0.020 (0.24)	0.039 (0.45)	0.040 (0.46)	0.021 (0.24)
VOLATILITY	-0.134 (-1.13)	-0.135 (-1.13)	-0.142 (-1.19)	-0.126 (-1.06)	-0.128 (-1.08)	-0.140 (-1.17)	0.042 (0.41)	0.043 (0.42)	0.039 (0.38)	0.047 (0.46)	0.047 (0.45)	0.040 (0.39)
INDUSTRY	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
OBSERVATIONS	11,059	11,059	11,059	11,059	11,059	11,059	9,300	9,300	9,300	9,300	9,300	9,300
R <sup>2</sup>	0.036	0.036	0.034	0.036	0.036	0.034	0.007	0.007	0.006	0.007	0.007	0.006

**Table 5 Effects of institutional ownerships on dividend policy, SOEs versus non-SOEs**

The table shows the results of the regression models that use institutional ownership to explain the dividend policy in the next period for the SOEs and non-SOEs separately. The firm-fixed effect regression model (results shown in columns 1, 2, 5, and 6) is specified as:  $DIV_{i,t} = \alpha_{1,i} + \alpha_2 MF_{i,t-1} + \alpha_3 BIS_{i,t-1} + \alpha_4 Control_{i,t-1} + Dummy(year) + \varepsilon_{i,t}$ , and the regression model of changes in variables (results shown in columns 3, 4, 7, and 8) is specified as,  $\Delta DIV_{i,t} = \alpha_1 + \alpha_2 \Delta MF_{i,t-1} + \alpha_3 \Delta BIS_{i,t-1} + \alpha_4 \Delta Control_{i,t-1} + Dummy(industry, year) + \varepsilon_{i,t}$ . In Panel A, the dependent variable is the cash dividend per share DIV, and in Panel B, the dependent variable is the dummy DIVDM, which is coded one if the firm pays cash dividends in a year and zero otherwise. The variable definitions are the same as those in Table 1. The numbers in parentheses are t-statistics. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels, respectively. Inclusion of industry dummies and year dummies are indicated by “YES” or “NO”.

*Panel A Effects of institutional ownerships on DIV, SOEs versus non-SOEs*

	SOEs				Non-SOEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Fix DIV	Fix DIV	Changes DIV	Changes DIV	Fix DIV	Fix DIV	Changes DIV	Changes DIV
MF	0.151*** (5.12)		0.110*** (3.47)		0.034 (1.12)		-0.018 (-0.51)	
BIS	-0.049 (-0.52)		-0.117 (-1.09)		0.190 (1.31)		0.454*** (2.92)	
MFMV		0.132*** (5.22)		0.066** (2.52)		0.030 (1.18)		-0.016 (-0.56)
BISMV		0.018 (0.17)		-0.051 (-0.45)		0.169 (1.21)		0.440*** (3.00)
FCF	0.089*** (4.00)	0.089*** (4.02)	0.023 (1.24)	0.024 (1.30)	0.052*** (2.79)	0.052*** (2.78)	0.018 (1.04)	0.017 (1.00)
GROWTH	0.006** (2.19)	0.006** (2.11)	0.002 (0.78)	0.002 (0.76)	0.001 (0.27)	0.001 (0.27)	-0.001 (-0.61)	-0.001 (-0.60)
HERF	0.024 (0.86)	0.018 (0.63)	-0.022 (-0.58)	-0.029 (-0.76)	0.117*** (4.06)	0.115*** (4.00)	0.097** (2.20)	0.095** (2.16)
EPS	0.069*** (8.40)	0.069*** (8.45)	-0.011 (-1.44)	-0.011 (-1.33)	0.055*** (7.15)	0.055*** (7.10)	-0.000 (-0.02)	-0.000 (-0.02)
LNASSET	-0.020*** (-4.71)	-0.019*** (-4.38)	-0.015** (-2.16)	-0.014** (-1.99)	-0.000 (-0.06)	0.000 (0.04)	0.004 (0.60)	0.004 (0.65)
MAO	0.172 (0.49)	0.170 (0.48)	-0.070 (-0.21)	-0.084 (-0.25)	-0.086 (-1.63)	-0.085 (-1.63)	-0.091* (-1.69)	-0.089* (-1.65)
LEVE	0.005 (0.35)	0.006 (0.40)	0.018 (1.04)	0.018 (1.06)	-0.000 (-0.05)	0.000 (0.01)	0.022* (1.74)	0.023* (1.78)
ROA	-0.113** (-2.48)	-0.117** (-2.57)	0.044 (1.08)	0.042 (1.03)	-0.120*** (-3.86)	-0.119*** (-3.83)	0.016 (0.55)	0.017 (0.56)
VOLATILITY	-0.022	-0.018	0.015	0.017	-0.042	-0.040	-0.025	-0.024

	(-0.37)	(-0.30)	(0.30)	(0.33)	(-1.00)	(-0.96)	(-0.66)	(-0.63)
INDUSTRY	NO	NO	YES	YES	NO	NO	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES
OBSERVATIONS	6,687	6,687	5,620	5,620	4,070	4,070	3,188	3,188
R <sup>2</sup>	0.048	0.048	0.009	0.008	0.040	0.040	0.012	0.012

*Panel B Effects of institutional ownerships on DIVDM, SOE versus non-SOEs*

	SOEs				Non-SOEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Fix	Fix	Changes	Changes	Fix	Fix	Changes	Changes
	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM	DIVDM
MF	0.321*** (3.45)		0.257** (2.27)		0.207* (1.65)		0.136 (0.89)	
BIS	-0.132 (-0.44)		0.081 (0.21)		1.522** (2.52)		1.380** (2.07)	
MFMV		0.254*** (3.18)		0.181* (1.93)		0.211** (1.97)		0.135 (1.07)
BISMV		0.059 (0.18)		0.245 (0.60)		1.167** (2.01)		0.862 (1.36)
FCF	0.028 (0.40)	0.030 (0.42)	-0.094 (-1.43)	-0.092 (-1.40)	0.177** (2.28)	0.175** (2.25)	0.095 (1.28)	0.091 (1.23)
GROWTH	0.004 (0.51)	0.004 (0.46)	0.004 (0.50)	0.004 (0.48)	-0.004 (-0.42)	-0.004 (-0.43)	-0.012 (-1.48)	-0.012 (-1.47)
HERF10	0.410*** (4.61)	0.394*** (4.43)	0.268** (1.97)	0.251* (1.85)	0.543*** (4.55)	0.530*** (4.45)	0.413** (2.18)	0.402** (2.12)
EPS	0.158*** (6.13)	0.160*** (6.22)	-0.017 (-0.60)	-0.016 (-0.57)	0.150*** (4.66)	0.147*** (4.55)	-0.010 (-0.30)	-0.013 (-0.37)
LNASSET	-0.026* (-1.91)	-0.022* (-1.65)	-0.088*** (-3.62)	-0.085*** (-3.50)	0.014 (0.79)	0.016 (0.93)	0.034 (1.21)	0.035 (1.24)
MAO	0.007 (0.01)	-0.002 (-0.00)	-0.061 (-0.05)	-0.095 (-0.08)	0.247 (1.14)	0.249 (1.15)	0.341 (1.47)	0.346 (1.49)
LEVE	-0.124*** (-2.71)	-0.123*** (-2.69)	0.060 (0.97)	0.062 (1.00)	-0.010 (-0.27)	-0.007 (-0.18)	-0.013 (-0.23)	-0.010 (-0.18)
ROA	-0.165 (-1.15)	-0.177 (-1.23)	0.090 (0.61)	0.089 (0.60)	-0.193 (-1.50)	-0.184 (-1.42)	0.014 (0.11)	0.023 (0.18)
VOLATILITY	0.078 (0.42)	0.085 (0.46)	0.141 (0.78)	0.147 (0.81)	-0.273 (-1.58)	-0.260 (-1.50)	-0.131 (-0.82)	-0.125 (-0.78)
INDUSTRY	NO	NO	YES	YES	NO	NO	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES
OBSERVATIONS	6,687	6,687	5,620	5,620	4,070	4,070	3,188	3,188
R <sup>2</sup>	0.034	0.033	0.010	0.010	0.036	0.035	0.012	0.011

**Table 6 Effects of institutional ownerships and free cash flows on dividend policy**

The table shows the results of the regression models that use institutional ownership and relative free cash flows to explain the dividend payments in the next period. The firm-fixed effect regression model (results in columns 1, 2, 5 and 6) is specified as:  $DIV_{i,t} = \alpha_1 + \alpha_2 MF_{i,t-1} + \alpha_3 MF_{i,t-1} * FCFDM_{i,t-1} + \alpha_4 Control_{i,t-1} + Dummy(year) + \varepsilon_{i,t}$ , and the regression model of changes in variables (results in columns 3, 4, 7 and 8) is specified as,  $\Delta DIV_{i,t} = \alpha_1 + \alpha_2 \Delta MF_{i,t-1} + \alpha_3 \Delta MF_{i,t-1} * \Delta FCFDM_{i,t-1} + \alpha_4 \Delta Control_{i,t-1} + Dummy(industry, year) + \varepsilon_{i,t}$ , where FCFDM is a dummy variable that is coded one if the residual of regression free cash flows against Tobin's Q for all firms in each industry and each year is positive, and otherwise zero. The dependent variables are the cash dividend per share DIV (columns 1-4) and dividend dummy DIVDM (columns 5-8). The variable definitions are the same as those in Table 1. The numbers in parentheses are t-statistics. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels, respectively. Inclusion of industry dummies and year dummies are indicated by "YES" or "NO".

	Fixed effects		Changes		Fixed effects		Changes	
	(1) DIV	(2) DIV	(3) DIV	(4) DIV	(5) DIVDM	(6) DIVDM	(7) DIVDM	(8) DIVDM
MF	-0.017 (-0.89)		-0.003 (-0.14)		-0.029 (-0.45)		0.008 (0.10)	
MF*FCFDM	0.175*** (7.97)		0.067*** (3.17)		0.257*** (3.42)		0.122 (1.53)	
MFMV		-0.008 (-0.47)		-0.027 (-1.53)		0.024 (0.40)		0.047 (0.70)
MFMV*FCFDM		0.137*** (7.19)		0.032* (1.78)		0.185*** (2.84)		0.071 (1.04)
FCF	0.054*** (3.56)	0.059*** (3.96)	0.016 (1.26)	0.021 (1.63)	0.067 (1.31)	0.078 (1.52)	-0.014 (-0.28)	-0.006 (-0.12)
GROWTH	0.004** (2.15)	0.004** (2.12)	0.000 (0.14)	0.000 (0.13)	0.004 (0.65)	0.004 (0.66)	-0.005 (-0.95)	-0.005 (-0.93)
HERF10	0.065*** (3.45)	0.062*** (3.29)	0.025 (0.91)	0.022 (0.81)	0.447*** (6.93)	0.445*** (6.91)	0.285*** (2.80)	0.283*** (2.78)
SOE	-0.006 (-1.24)	-0.006 (-1.23)	-0.008 (-1.31)	-0.008 (-1.30)	-0.013 (-0.77)	-0.013 (-0.76)	-0.031 (-1.28)	-0.031 (-1.28)
EPS	0.065*** (11.94)	0.065*** (12.04)	-0.006 (-1.22)	-0.006 (-1.10)	0.168*** (9.05)	0.168*** (9.06)	-0.012 (-0.61)	-0.012 (-0.58)
LNASSET	-0.010*** (-3.75)	-0.010*** (-3.60)	-0.003 (-0.69)	-0.002 (-0.51)	-0.011 (-1.11)	-0.011 (-1.16)	-0.016 (-0.97)	-0.016 (-0.98)
MAO	-0.064 (-1.02)	-0.067 (-1.05)	-0.080 (-1.34)	-0.083 (-1.38)	0.286 (1.33)	0.283 (1.31)	0.357 (1.58)	0.358 (1.59)
LEVE	-0.010 (-1.28)	-0.009 (-1.18)	0.008 (0.77)	0.008 (0.79)	-0.081*** (-3.07)	-0.080*** (-3.01)	-0.016 (-0.42)	-0.015 (-0.41)
ROA	-0.132*** (-5.13)	-0.134*** (-5.22)	0.023 (1.02)	0.022 (0.95)	-0.230*** (-2.61)	-0.231*** (-2.63)	0.029 (0.34)	0.027 (0.31)
VOLATILITY	-0.023 (-0.66)	-0.022 (-0.62)	0.006 (0.20)	0.005 (0.19)	-0.135 (-1.14)	-0.133 (-1.11)	0.042 (0.40)	0.043 (0.42)

INDUSTRY	NO	NO	YES	YES	NO	NO	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES
OBSERVATIONS	11,059	11,059	9,300	9,300	11,059	11,059	9,300	9,300
R <sup>2</sup>	0.043	0.042	0.005	0.005	0.035	0.035	0.007	0.007

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**Table 7 Effects of institutional ownerships on agency costs**

The table shows the results of regression models that use institutional ownership to explain the agency costs in the next period. The firm-fixed effect regression model (results in columns 1, 2, 5, 6, 9 and 10) is specified as:  $AC_{i,t} = \alpha_{1,i} + \alpha_2 MF_{i,t-1} (BIS_{i,t-1}) + \alpha_3 Control_{i,t-1} + Dummy(year) + \varepsilon_{i,t}$ , and the regression model of changes in variables (results in columns 3, 4, 7, 8, 11 and 12) is specified as:  $\Delta AC_{i,t} = \alpha_1 + \alpha_2 \Delta MF_{i,t-1} (\Delta BIS_{i,t-1}) + \alpha_3 \Delta Control_{i,t-1} + Dummy(industry, year) + \varepsilon_{i,t}$ . The dependent variable AC is a firm's agency costs (operating expense scaled by annual sales) minus its industry median. The regressions are run separately for SOEs and non-SOEs. FORO refers to foreign ownerships, and LPO is the legal person ownership. TANG is the net fixed assets plus inventory over total assets. SIZE is the natural logarithm of annual sales, and ADJR refers to the market-adjusted annual stock returns. Control variables also include DUA, a dummy variable equals one if CEO and chairman are separated individuals and zero otherwise, INDEP, number of independent directors and DIRECTOR, the board size. The other variable definitions are the same as those in Table 1. The numbers in parentheses are t-statistics. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels, respectively. Inclusion of industry dummies and year dummies are indicated by "YES" or "NO".

	FULL				SOEs				Non-SOEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Fix AC	Fix AC	changes AC	changes AC	Fix AC	Fix AC	changes AC	changes AC	Fix AC	Fix AC	changes AC	changes AC
MF	-0.071*** (-4.05)		-0.020 (-1.09)		-0.094*** (-4.94)		-0.036* (-1.86)		-0.053 (-1.54)		-0.014 (-0.39)	
BIS	-0.109* (-1.69)		-0.045 (-0.67)		-0.163*** (-2.63)		-0.029 (-0.44)		-0.053 (-0.32)		-0.196 (-1.23)	
MFMV		-0.072*** (-4.74)		-0.024 (-1.59)		-0.084*** (-5.06)		-0.036** (-2.23)		-0.057* (-1.90)		-0.020 (-0.64)
BISMV		-0.140** (-2.07)		-0.076 (-1.12)		-0.202*** (-3.02)		-0.049 (-0.72)		-0.025 (-0.15)		-0.234 (-1.54)
DIV	-0.043*** (-4.73)	-0.041*** (-4.51)	0.003 (0.42)	0.004 (0.46)	-0.031*** (-3.44)	-0.029*** (-3.24)	0.005 (0.66)	0.006 (0.72)	-0.058*** (-2.66)	-0.056*** (-2.59)	0.002 (0.08)	0.001 (0.07)
LPO	-0.045*** (-3.14)	-0.044*** (-3.04)	-0.032* (-1.82)	-0.031* (-1.77)	-0.020 (-0.92)	-0.016 (-0.74)	-0.025 (-0.97)	-0.024 (-0.92)	-0.084*** (-3.73)	-0.084*** (-3.70)	-0.071** (-2.54)	-0.070** (-2.51)
FORO	-0.016 (-0.62)	-0.015 (-0.57)	0.022 (0.74)	0.023 (0.77)	0.002 (0.05)	0.001 (0.03)	0.073* (1.70)	0.074* (1.72)	0.004 (0.11)	0.006 (0.15)	0.025 (0.53)	0.027 (0.57)
MAO	-0.060 (-1.09)	-0.060 (-1.09)	0.000 (0.00)	-0.001 (-0.01)	-0.173 (-0.73)	-0.173 (-0.73)	-0.198 (-1.00)	-0.193 (-0.97)	-0.048 (-0.74)	-0.048 (-0.74)	-0.014 (-0.23)	-0.015 (-0.26)
HERF10	-0.135*** (-8.20)	-0.134*** (-8.19)	-0.028 (-1.36)	-0.027 (-1.34)	-0.022 (-1.10)	-0.021 (-1.07)	0.033 (1.43)	0.034 (1.47)	-0.205*** (-6.35)	-0.204*** (-6.33)	-0.090** (-2.08)	-0.090** (-2.08)
TANG	0.019** (2.28)	0.018** (2.24)	0.010 (1.19)	0.010 (1.19)	0.012 (1.24)	0.011 (1.20)	0.007 (0.67)	0.007 (0.66)	0.016 (1.03)	0.015 (1.02)	-0.001 (-0.04)	-0.001 (-0.04)
LEVE	0.029*** (4.64)	0.028*** (4.44)	-0.018** (-2.48)	-0.018** (-2.53)	0.035*** (3.93)	0.033*** (3.73)	-0.016* (-1.69)	-0.017* (-1.75)	0.005 (0.46)	0.005 (0.42)	-0.039*** (-3.10)	-0.040*** (-3.13)
SIZE	0.022*** (14.55)	0.021*** (14.52)	0.013*** (8.28)	0.013*** (8.27)	0.019*** (8.55)	0.018*** (8.34)	0.012*** (4.61)	0.012*** (4.57)	0.020*** (7.49)	0.020*** (7.49)	0.011*** (3.67)	0.011*** (3.68)
ADJR	-0.007*** (-14.55)	-0.006*** (-14.52)	-0.002 (-0.82)	-0.001 (-0.82)	-0.004** (-2.63)	-0.003** (-2.63)	0.001 (0.32)	0.001 (0.32)	-0.009*** (-3.10)	-0.009*** (-3.10)	-0.005** (-2.08)	-0.004** (-2.08)

	(-4.71)	(-4.31)	(-1.57)	(-1.37)	(-2.28)	(-1.97)	(1.03)	(1.18)	(-3.56)	(-3.41)	(-2.43)	(-2.28)
DUA	0.008**	0.008**	0.001	0.001	-0.002	-0.003	-0.000	-0.000	0.005	0.005	0.003	0.003
	(2.24)	(2.21)	(0.39)	(0.37)	(-0.51)	(-0.58)	(-0.06)	(-0.07)	(0.83)	(0.82)	(0.73)	(0.72)
INDEP	-0.043*	-0.044*	-0.047**	-0.047**	-0.003	-0.004	-0.002	-0.002	-0.120***	-0.121***	-0.119***	-0.119***
	(-1.89)	(-1.92)	(-2.14)	(-2.14)	(-0.10)	(-0.14)	(-0.07)	(-0.08)	(-2.69)	(-2.71)	(-2.77)	(-2.76)
DIRECTOR	-0.001	-0.001	0.000	0.000	-0.000	-0.000	0.001	0.001	-0.004**	-0.004**	-0.003*	-0.003*
	(-1.07)	(-1.07)	(0.02)	(0.01)	(-0.30)	(-0.26)	(0.69)	(0.69)	(-2.50)	(-2.51)	(-1.66)	(-1.66)
INDUSTRY	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
OBSERVATIONS	10,680	10,680	8,989	8,989	6,480	6,480	5,427	5,427	3,901	3,901	3,077	3,077
R <sup>2</sup>	0.067	0.068	0.038	0.038	0.061	0.062	0.025	0.026	0.076	0.076	0.055	0.055

**Table 8 Effects of institutional ownerships on firm performance**

The table shows the results of regression models that use institutional ownership to explain the return on assets in the next period. The firm-fixed effect regression model (results in columns 1, 2, 5, 6, 9 and 10) is specified as:  $ROA_{i,t} = \alpha_{1,i} + \alpha_2 MF_{i,t-1} (BIS_{i,t-1}) + \alpha_3 Control_{i,t-1} + Dummy (year) + \varepsilon_{i,t}$ , and the regression model of changes in variables (results in columns 3, 4, 7, 8, 11 and 12) is specified as:  $\Delta ROA_{i,t} = \alpha_1 + \alpha_2 \Delta MF_{i,t-1} (\Delta BIS_{i,t-1}) + \alpha_3 \Delta Control_{i,t-1} + Dummy (industry, year) + \varepsilon_{i,t}$ . The dependent variable ROA is a firm's return on assets (net profits over total assets) minus its industry median. FORO refers to foreign ownerships, and LPO is the legal person ownership. TANG is the net fixed assets plus inventory over total assets. SIZE is the natural logarithm of annual sales, and ADJR refers to the market-adjusted annual stock returns. Control variables also include DUA, a dummy variable equals one if CEO and chairman are separated individuals and zero otherwise, INDEP, number of independent directors and DIRECTOR, the board size. The other variable definitions are the same as those in Table 1. The numbers in parentheses are t-statistics. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels, respectively. Inclusion of industry dummies and year dummies are indicated by "YES" or "NO".

	FULL				SOEs				Non-SOEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Fix ROA	Fix ROA	changes ROA	changes ROA	Fix ROA	Fix ROA	changes ROA	changes ROA	Fix ROA	Fix ROA	changes ROA	changes ROA
MF	0.051*** (3.69)		0.031* (1.88)		0.062*** (4.33)		0.030* (1.68)		0.038 (1.38)		0.051 (1.58)	
BIS			-0.006 (-0.09)		0.058 (1.24)		0.034 (0.57)		0.010 (0.07)		-0.035 (-0.25)	
MFMV		0.063*** (5.26)		0.036*** (2.60)		0.072*** (5.78)		0.035** (2.37)		0.039 (1.62)		0.043 (1.62)
BISMV		0.090* (1.67)		0.018 (0.29)		0.112** (2.23)		0.066 (1.06)		0.045 (0.34)		-0.039 (-0.29)
DIV	0.055*** (7.55)	0.053*** (7.25)	0.008 (1.10)	0.008 (1.03)	0.050*** (7.27)	0.047*** (6.94)	0.013* (1.86)	0.013* (1.79)	0.061*** (3.52)	0.061*** (3.48)	0.002 (0.09)	0.001 (0.06)
LPO	-0.001 (-0.07)	-0.002 (-0.19)	-0.021 (-1.32)	-0.022 (-1.37)	0.003 (0.15)	-0.000 (-0.01)	0.006 (0.27)	0.005 (0.21)	-0.006 (-0.32)	-0.006 (-0.33)	-0.037 (-1.49)	-0.037 (-1.51)
FORO	0.023 (1.14)	0.022 (1.08)	-0.007 (-0.23)	-0.008 (-0.27)	0.020 (0.72)	0.021 (0.75)	-0.034 (-0.86)	-0.035 (-0.89)	-0.013 (-0.40)	-0.014 (-0.44)	-0.000 (-0.00)	-0.002 (-0.05)
MAO	0.053 (1.21)	0.053 (1.22)	-0.016 (-0.35)	-0.015 (-0.34)	0.029 (0.16)	0.032 (0.18)	-0.008 (-0.04)	-0.012 (-0.07)	0.080 (1.55)	0.080 (1.55)	0.004 (0.07)	0.004 (0.08)
HERF10	0.132*** (10.14)	0.132*** (10.15)	0.070*** (3.76)	0.070*** (3.74)	0.053*** (3.51)	0.053*** (3.53)	0.012 (0.57)	0.011 (0.52)	0.169*** (6.50)	0.169*** (6.49)	0.087** (2.27)	0.086** (2.25)
TANG	0.009 (1.33)	0.009 (1.42)	0.009 (1.14)	0.009 (1.14)	0.003 (0.37)	0.003 (0.48)	0.016* (1.74)	0.016* (1.75)	0.001 (0.11)	0.001 (0.11)	0.016 (1.08)	0.016 (1.08)
LEVE	0.041*** (8.12)	0.042*** (8.33)	0.187*** (28.56)	0.187*** (28.61)	0.027*** (4.09)	0.029*** (4.34)	0.182*** (20.47)	0.182*** (20.54)	0.090*** (10.24)	0.091*** (10.28)	0.212*** (19.05)	0.212*** (19.07)
SIZE	-0.011*** (-9.11)	-0.011*** (-9.18)	-0.012*** (-7.77)	-0.012*** (-7.76)	-0.009*** (-5.51)	-0.009*** (-5.51)	-0.022*** (-9.29)	-0.022*** (-9.28)	-0.007*** (-3.20)	-0.007*** (-3.18)	-0.006** (-2.10)	-0.006** (-2.09)
ADJR	0.007***	0.007***	0.000	-0.000	0.005***	0.004***	-0.000	-0.001	0.008***	0.008***	0.001	0.001

	(6.58)	(6.00)	(0.24)	(-0.00)	(4.12)	(3.53)	(-0.46)	(-0.72)	(4.02)	(3.88)	(0.49)	(0.46)
DUA	0.004	0.004	0.001	0.001	0.002	0.002	-0.000	-0.000	0.010*	0.010*	0.001	0.001
	(1.32)	(1.36)	(0.21)	(0.23)	(0.63)	(0.69)	(-0.14)	(-0.12)	(1.92)	(1.93)	(0.23)	(0.24)
INDEP	0.060***	0.061***	0.071***	0.072***	0.051***	0.052***	0.067***	0.067***	0.016	0.016	0.056	0.056
	(3.35)	(3.40)	(3.52)	(3.54)	(2.65)	(2.71)	(2.94)	(2.95)	(0.45)	(0.46)	(1.47)	(1.48)
DIRECTOR	-0.000	-0.000	0.001	0.001	0.000	-0.000	0.001	0.001	-0.000	-0.000	0.002	0.002
	(-0.55)	(-0.53)	(0.89)	(0.90)	(0.00)	(-0.01)	(1.09)	(1.09)	(-0.19)	(-0.18)	(0.96)	(0.97)
INDUSTRY	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
OASERVATIONS	10,680	10,680	8,989	8,989	6,480	6,480	5,427	5,427	3,901	3,901	3,077	3,077
R <sup>2</sup>	0.047	0.049	0.110	0.110	0.040	0.043	0.094	0.095	0.077	0.078	0.140	0.140

**Table 9 Reverse regressions**

The table shows the results of the reverse regression models that use the changes in dividend policy and agency costs from time  $t-2$  to  $t-1$  to explain the changes in institutional ownership from time  $t-1$  to  $t$ . The regression model is specified as,  $\Delta MF_{i,t} = \alpha_1 + \alpha_2 \Delta AC_{i,t-1} + \alpha_3 \Delta DIV_{i,t-1} (\Delta DIVDM_{i,t-1}) + \alpha_4 Control_{i,t-1} + Dummy(industry, year) + \varepsilon_{i,t}$ . The variable definitions are the same as those in Table 1. The numbers in parentheses are t-statistics. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels, respectively. Inclusion of industry dummies and year dummies are indicated by “YES” or “NO”.

	FULL SAMPLE							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$\Delta MF$	$\Delta MFMV$	$\Delta BIS$	$\Delta BISMV$	$\Delta MF$	$\Delta MFMV$	$\Delta BIS$	$\Delta BISMV$
$\Delta AC$	-0.815 (-1.22)	-0.421 (-0.53)	0.024 (0.14)	-0.004 (-0.02)	-0.770 (-1.15)	-0.312 (-0.40)	0.017 (0.10)	-0.011 (-0.07)
$\Delta DIV$	-0.285 (-0.59)	-0.682 (-1.19)	0.234* (1.85)	0.252** (2.07)				
$\Delta DIVDM$					0.080 (0.62)	0.190 (1.25)	0.060* (1.79)	0.067** (2.07)
$\Delta LPO$	-2.486** (-2.34)	-2.376* (-1.89)	0.189 (0.68)	0.009 (0.03)	-2.480** (-2.33)	-2.363* (-1.88)	0.195 (0.70)	0.016 (0.06)
$\Delta FORO$	-1.270 (-0.69)	-3.570 (-1.63)	-0.260 (-0.53)	-0.391 (-0.84)	-1.269 (-0.68)	-3.567 (-1.63)	-0.248 (-0.51)	-0.378 (-0.81)
$\Delta MAO$	2.899 (0.98)	5.894* (1.69)	-0.674 (-0.87)	-0.442 (-0.59)	2.899 (0.98)	5.893* (1.68)	-0.662 (-0.85)	-0.429 (-0.57)
$\Delta HERF10$	1.064 (0.88)	1.087 (0.76)	0.015 (0.05)	0.091 (0.30)	1.045 (0.86)	1.043 (0.73)	0.026 (0.08)	0.102 (0.33)
$\Delta TANG$	-0.301 (-0.57)	-0.095 (-0.15)	-0.013 (-0.09)	-0.040 (-0.30)	-0.301 (-0.57)	-0.093 (-0.15)	-0.014 (-0.10)	-0.041 (-0.31)
$\Delta LEVE$	0.267 (0.61)	-0.074 (-0.14)	0.022 (0.19)	0.045 (0.41)	0.282 (0.65)	-0.037 (-0.07)	0.023 (0.20)	0.046 (0.42)
$\Delta SIZE$	0.116 (1.16)	0.091 (0.78)	0.043* (1.65)	0.050** (2.00)	0.111 (1.12)	0.081 (0.69)	0.043* (1.65)	0.050** (2.00)
$\Delta ADJR$	-0.167*** (-2.79)	0.008 (0.11)	-0.004 (-0.25)	-0.019 (-1.25)	-0.169*** (-2.83)	0.002 (0.03)	-0.003 (-0.21)	-0.018 (-1.22)
$\Delta DUA$	-0.174 (-1.05)	0.006 (0.03)	-0.040 (-0.93)	-0.036 (-0.85)	-0.174 (-1.05)	0.006 (0.03)	-0.040 (-0.92)	-0.035 (-0.83)
$\Delta INDEP$	-1.226 (-0.92)	-1.102 (-0.70)	0.220 (0.63)	-0.045 (-0.13)	-1.233 (-0.92)	-1.119 (-0.71)	0.209 (0.59)	-0.057 (-0.17)
$\Delta DIRECTOR$	-0.029 (-0.51)	-0.053 (-0.79)	0.002 (0.12)	-0.006 (-0.45)	-0.030 (-0.53)	-0.056 (-0.84)	0.002 (0.10)	-0.007 (-0.47)
INDUSTRY	YES	YES	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES
OBSERVATIONS	8,989	8,989	8,989	8,989	8,989	8,989	8,989	8,989
R <sup>2</sup>	0.031	0.080	0.007	0.015	0.031	0.080	0.007	0.015

**Table 10 Instrumental variable method**

This table shows the results of the two-stage instrumental variable regressions. All independent variables in both stages are lagged by one period. PROA is the proportion of tradable A-shares. INDEX is a dummy which equals one if the firm is included in the Shanghai 180 Index or Shenzhen Component Index in a year, and zero otherwise. The other variable definitions are the same as those in Table 1. The second stage uses firm-fixed effect regressions. The numbers in parentheses are t-statistics. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels, respectively. Inclusion of industry dummies and year dummies are indicated by “YES” or “NO”.

	Second stage				First stage	
	(1) DIV	(2) DIV	(3) DIVDM	(4) DIVDM	(5) MF	(6) MFMV
MF	0.675*** (4.96)		1.590*** (3.36)		PROA 0.040*** (12.02)	0.021*** (5.53)
MFMV		0.840*** (4.74)		2.167*** (3.52)	INDEX 0.011*** (5.06)	0.017*** (6.51)
FCF	-0.013 (-0.72)	-0.046* (-1.93)	-0.149** (-2.31)	-0.245*** (-2.97)	FCF 0.083*** (9.51)	0.105*** (10.63)
GROWTH	0.002 (1.30)	0.003* (1.79)	0.012* (1.94)	0.015** (2.33)	GROWTH -0.001 (-0.82)	-0.002 (-1.56)
HERF10	0.087*** (3.87)	0.067*** (3.28)	0.345*** (4.41)	0.308*** (4.37)	HERF10 -0.054*** (-8.37)	-0.035*** (-4.78)
SOE	-0.004 (-0.76)	-0.002 (-0.45)	-0.005 (-0.26)	0.000 (0.00)	SOE -0.003* (-1.76)	-0.005*** (-2.67)
EPS	-0.025** (-2.10)	-0.038** (-2.55)	-0.056 (-1.33)	-0.101* (-1.94)	EPS 0.079*** (28.05)	0.078*** (24.78)
LNASSET	-0.004 (-1.19)	-0.000 (-0.00)	0.008 (0.76)	0.016 (1.64)	LNASSET 0.011*** (14.92)	0.006*** (6.49)
MAO	-0.118** (-2.04)	-0.190*** (-3.07)	0.052 (0.26)	-0.143 (-0.66)	MAO 0.076*** (5.52)	0.144*** (9.28)
LEVE	-0.011 (-1.45)	0.002 (0.24)	-0.015 (-0.57)	0.019 (0.67)	LEVE -0.005* (-1.67)	-0.018*** (-5.62)
ROA	0.021 (0.68)	0.021 (0.65)	0.071 (0.65)	0.089 (0.81)	ROA -0.129*** (-8.71)	-0.102*** (-6.11)
VOLATILITY	0.005 (0.15)	-0.023 (-0.68)	0.053 (0.45)	-0.021 (-0.18)	VOLATILITY 0.010 (0.66)	0.040 (1.64)
INDUSTRY	NO	NO	NO	NO	INDUSTRY YES	YES
YEAR	YES	YES	YES	YES	YEAR YES	YES
OBSERVATIONS	11,059	11,059	11,059	11,059	OASERVATIONS	11,059
R <sup>2</sup>	0.277	0.210	0.257	0.217	R <sup>2</sup>	0.251
					F-TEST OF INSTRUMENTS	81.78
					(P-VALUE)	(0.000)

**Table 11 Institutional investment horizon**

This table presents the results of firm-fixed effects regressions by adding an interaction term of weighted average churn rate (WACR) and mutual fund ownership as an explanatory variable. The regressions are run separately for the full sample, SOE sample and non-SOE sample. All independent variables are lagged by one year. The variables definitions are the same as those in Table 1. The numbers in parentheses are t-statistics. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels, respectively. Inclusion of industry dummies and year dummies are indicated by “YES” or “NO”.

	FULL				SOEs				Non-SOEs			
	(1) DIV	(2) DIV	(3) DIVDM	(4) DIVDM	(5) DIV	(6) DIV	(7) DIVDM	(8) DIVDM	(9) DIV	(10) DIV	(11) DIVDM	(12) DIVDM
MF	0.255*** (6.10)		0.797** (5.58)		0.323*** (5.56)		0.773*** (4.22)		0.066 (1.11)		0.741*** (3.00)	
MF*WACR	-0.336*** (-3.47)		-1.300*** (-3.94)		-0.468*** (-3.56)		-1.229*** (-2.96)		-0.049 (-0.34)		-1.387** (-2.32)	
MFMV		0.222*** (5.92)		0.743*** (5.80)		0.276*** (5.20)		0.672*** (4.02)		0.064 (1.24)		0.668*** (3.11)
MFMV*WACR		-0.299*** (-3.24)		-1.311*** (-4.16)		-0.413*** (-3.20)		-1.184*** (-2.91)		-0.057 (-0.44)		-1.227** (-2.28)
FCF	0.078*** (5.32)	0.078*** (5.33)	0.098** (1.97)	0.098** (1.97)	0.090*** (4.06)	0.090*** (4.06)	0.031 (0.44)	0.032 (0.45)	0.052*** (2.76)	0.052** (2.76)	0.170** (2.19)	0.171** (2.20)
GROWTH	0.004** (2.19)	0.004** (2.04)	0.004 (0.66)	0.003 (0.52)	0.006** (2.07)	0.005** (1.98)	0.004 (0.41)	0.003 (0.33)	0.001 (0.28)	0.001 (0.27)	-0.004 (-0.41)	-0.004 (-0.44)
HERF10	0.070*** (3.68)	0.063*** (3.36)	0.468*** (7.25)	0.449*** (6.98)	0.026 (0.93)	0.018 (0.64)	0.416*** (4.69)	0.395*** (4.47)	0.117*** (4.08)	0.115*** (4.03)	0.545*** (4.56)	0.529*** (4.44)
EPS	0.064*** (11.68)	0.064*** (11.64)	0.160*** (8.59)	0.159*** (8.55)	0.069*** (8.43)	0.069*** (8.48)	0.158*** (6.15)	0.160*** (6.23)	0.055*** (7.06)	0.054*** (6.99)	0.146*** (4.54)	0.143*** (4.42)
LNASSET	-0.013*** (-4.61)	-0.011*** (-4.11)	-0.018* (-1.95)	-0.014 (-1.52)	-0.021*** (-4.91)	-0.019*** (-4.47)	-0.028** (-2.08)	-0.023* (-1.73)	-0.001 (-0.14)	-0.000 (-0.05)	0.011 (0.64)	0.014 (0.83)
MAO	-0.064 (-1.01)	-0.065 (-1.03)	0.291 (1.35)	0.289 (1.34)	0.156 (0.44)	0.146 (0.41)	-0.036 (-0.03)	-0.071 (-0.06)	-0.085 (-1.62)	-0.085 (-1.62)	0.252 (1.16)	0.253 (1.16)
LEVE	-0.010 (-1.24)	-0.008 (-1.01)	-0.080*** (-3.02)	-0.074*** (-2.82)	0.005 (0.36)	0.007 (0.45)	-0.124*** (-2.71)	-0.120*** (-2.64)	-0.000 (-0.05)	0.000 (0.00)	-0.010 (-0.25)	-0.006 (-0.16)
ROA	-0.132*** (-5.11)	-0.132*** (-5.12)	-0.218** (-2.49)	-0.218** (-2.49)	-0.118*** (-2.58)	-0.122*** (-2.67)	-0.178 (-1.24)	-0.189 (-1.32)	-0.118*** (-3.81)	-0.117*** (-3.77)	-0.188 (-1.46)	-0.178 (-1.38)
VOLATILITY	-0.024 (-0.69)	-0.020 (-0.58)	-0.133 (-1.11)	-0.121 (-1.01)	-0.021 (-0.37)	-0.014 (-0.25)	0.079 (0.43)	0.094 (0.51)	-0.042 (-1.00)	-0.040 (-0.96)	-0.275 (-1.59)	-0.260 (-1.50)
INDUSTRY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
OBSERVATIONS	11,059	11,059	11,059	11,059	6,687	6,687	6,687	6,687	4,070	4,070	4,070	4,070
R <sup>2</sup>	0.041	0.042	0.037	0.037	0.046	0.045	0.035	0.035	0.038	0.038	0.035	0.035

**Table 12 Large mutual fund ownership (LMF)**

The table shows the results of regression models that use LMF as an independent variable. LMF for a firm is defined as the aggregate ownership of mutual funds that each holds at least 1% shares of the firm. The regressions are run separately for the full sample, SOE sample and non-SOE sample using both firm-fixed effect models (columns 1, 2, 5, 6, 9 and 10) and change models (columns 3, 4, 7, 8, 11 and 12). The variable definitions are the same as those in Table 1. The numbers in parentheses are t-statistics. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels, respectively. Inclusion of industry dummies and year dummies are indicated by “YES” or “NO”.

	FULL				SOEs				Non-SOEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Fix	Fix	Changes	Changes	Fix	Fix	Changes	Changes	Fix	Fix	Changes	Changes
	DIV	DIVDM	DIV	DIVDM	DIV	DIVDM	DIV	DIVDM	DIV	DIVDM	DIV	DIVDM
LMF	0.137*** (4.31)	0.484*** (4.46)	0.081** (2.38)	0.339*** (2.65)	0.115** (2.52)	0.515*** (3.57)	0.100** (2.12)	0.465*** (2.76)	0.072 (1.64)	0.335* (1.84)	0.008 (0.15)	0.099 (0.46)
FCF	0.080*** (5.46)	0.100** (2.01)	0.025** (2.03)	0.001 (0.03)	0.093*** (4.16)	0.029 (0.41)	0.024 (1.29)	-0.095 (-1.44)	0.052*** (2.79)	0.177** (2.28)	0.017 (0.98)	0.093 (1.26)
GROWTH	0.004** (2.17)	0.004 (0.70)	0.000 (0.17)	-0.005 (-0.93)	0.006** (2.13)	0.004 (0.48)	0.002 (0.80)	0.004 (0.49)	0.001 (0.28)	-0.004 (-0.43)	-0.001 (-0.59)	-0.012 (-1.49)
HERF10	0.063*** (3.33)	0.454*** (7.05)	0.025 (0.93)	0.292*** (2.86)	0.014 (0.51)	0.398*** (4.49)	-0.029 (-0.76)	0.269** (1.99)	0.117*** (4.06)	0.535*** (4.48)	0.094** (2.12)	0.394** (2.08)
EPS	0.067*** (12.34)	0.164*** (8.88)	-0.006 (-1.19)	-0.015 (-0.73)	0.074*** (9.10)	0.162*** (6.36)	-0.010 (-1.21)	-0.016 (-0.57)	0.055*** (7.13)	0.150*** (4.67)	-0.001 (-0.14)	-0.010 (-0.28)
LNASSET	-0.010*** (-3.76)	-0.013 (-1.35)	-0.003 (-0.71)	-0.017 (-1.01)	-0.018*** (-4.16)	-0.022* (-1.65)	-0.014** (-2.00)	-0.087*** (-3.58)	0.000 (0.01)	0.017 (1.00)	0.004 (0.56)	0.036 (1.26)
MAO	-0.067 (-1.06)	0.286 (1.33)	-0.082 (-1.37)	0.351 (1.56)	0.145 (0.41)	-0.055 (-0.05)	-0.079 (-0.24)	-0.092 (-0.08)	-0.085 (-1.63)	0.248 (1.14)	-0.092* (-1.70)	0.340 (1.47)
LEVE	-0.010 (-1.28)	-0.080*** (-3.03)	0.008 (0.78)	-0.015 (-0.41)	0.003 (0.23)	-0.127*** (-2.79)	0.018 (1.02)	0.060 (0.96)	-0.000 (-0.01)	-0.009 (-0.22)	0.023* (1.78)	-0.011 (-0.19)
ROA	-0.138*** (-5.35)	-0.222** (-2.53)	0.022 (0.97)	0.034 (0.39)	-0.126*** (-2.75)	-0.178 (-1.24)	0.038 (0.94)	0.087 (0.59)	-0.119*** (-3.84)	-0.194 (-1.50)	0.019 (0.66)	0.015 (0.12)
VOLATILITY	-0.025 (-0.72)	-0.133 (-1.11)	0.005 (0.19)	0.043 (0.42)	-0.022 (-0.37)	0.083 (0.45)	0.014 (0.28)	0.146 (0.81)	-0.042 (-1.00)	-0.275 (-1.59)	-0.024 (-0.64)	-0.129 (-0.80)
INDUSTRY	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
OBSERVATIONS	11,059	11,059	9,300	9,300	6,687	6,687	5,620	5,620	4,070	4,070	3,188	3,188
R <sup>2</sup>	0.038	0.036	0.005	0.007	0.040	0.034	0.008	0.010	0.038	0.033	0.009	0.010



**Table 13 Another measure of dividend policy: cash dividends over book assets (DIVA)**

The table shows the results of regression models that use DIVA as the dependent variable. The regressions are run separately for the full sample, SOE sample and non-SOE sample using both firm-fixed effect models (columns 1, 2, 5, 6, 9 and 10) and change models (columns 3, 4, 7, 8, 11 and 12). The variable definitions are the same as those in Table 1. The numbers in parentheses are t- statistics. \*, \*\*, \*\*\* indicate the 10%, 5%, and 1% significance levels, respectively. Inclusion of industry dummies and year dummies are indicated by “YES” or “NO”.

	FULL				SOEs				Non-SOEs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Fix	Fix	Changes	Changes	Fix	Fix	Changes	Changes	Fix	Fix	Changes	Changes
	DIVA	DIVA	DIVA	DIVA	DIVA	DIVA	DIVA	DIVA	DIVA	DIVA	DIVA	DIVA
MF	0.017*** (6.84)		0.008*** (2.71)		0.020*** (6.23)		0.011*** (2.98)		0.003 (0.62)		0.000 (0.00)	
BIS	0.006 (0.65)		0.010 (0.93)		0.002 (0.21)		-0.003 (-0.28)		0.023 (1.09)		0.060*** (2.72)	
MFMV		0.019*** (8.78)		0.006** (2.41)		0.024*** (8.75)		0.009*** (3.18)		0.001 (0.28)		-0.003 (-0.81)
BISMV		0.016 (1.64)		0.016 (1.50)		0.015 (1.35)		0.004 (0.34)		0.018 (0.90)		0.054*** (2.60)
FCF	0.010*** (5.68)	0.010*** (5.59)	0.002 (1.30)	0.002 (1.31)	0.011*** (4.37)	0.010*** (4.27)	0.001 (0.71)	0.002 (0.74)	0.007** (2.44)	0.007** (2.45)	0.001 (0.37)	0.001 (0.35)
GROWTH	0.000** (2.31)	0.000** (2.21)	0.000 (0.67)	0.000 (0.65)	0.001** (2.53)	0.001** (2.43)	0.000 (1.35)	0.000 (1.31)	-0.000 (-0.01)	-0.000 (-0.03)	-0.000 (-0.10)	-0.000 (-0.11)
HERF10	0.010*** (4.34)	0.009*** (4.16)	0.002 (0.53)	0.001 (0.41)	0.003 (0.88)	0.002 (0.68)	-0.001 (-0.20)	-0.002 (-0.35)	0.013*** (3.12)	0.013*** (3.06)	0.007 (1.07)	0.006 (0.99)
EPS	0.002** (2.36)	0.001** (2.00)	-0.001 (-1.12)	-0.001 (-1.12)	0.001 (0.88)	0.000 (0.47)	-0.001 (-1.32)	-0.001 (-1.37)	0.003** (2.50)	0.003** (2.53)	0.000 (0.38)	0.001 (0.46)
LNASSET	-0.004*** (-10.51)	-0.003*** (-10.29)	-0.001 (-1.01)	-0.000 (-0.87)	-0.005*** (-9.51)	-0.004*** (-9.29)	-0.002** (-2.16)	-0.002** (-2.02)	-0.001 (-1.23)	-0.001 (-1.12)	0.000 (0.34)	0.000 (0.43)
MAO	-0.005 (-0.68)	-0.005 (-0.67)	-0.007 (-1.02)	-0.007 (-1.01)	0.021 (0.53)	0.022 (0.56)	-0.003 (-0.08)	-0.005 (-0.12)	-0.010 (-1.27)	-0.010 (-1.27)	-0.009 (-1.14)	-0.008 (-1.10)
LEVE	-0.005*** (-5.15)	-0.005*** (-4.89)	0.001 (0.44)	0.001 (0.51)	-0.005*** (-3.22)	-0.005*** (-3.08)	0.002 (0.82)	0.002 (0.88)	-0.001 (-1.03)	-0.001 (-1.00)	0.002 (1.32)	0.002 (1.35)
ROA	0.006** (1.99)	0.007** (2.12)	0.002 (0.68)	0.002 (0.69)	0.016*** (3.24)	0.017*** (3.28)	0.004 (0.82)	0.004 (0.85)	-0.002 (-0.55)	-0.003 (-0.57)	-0.001 (-0.16)	-0.001 (-0.21)
VOLATILITY	-0.005 (-1.19)	-0.004 (-1.04)	-0.002 (-0.46)	-0.001 (-0.42)	-0.004 (-0.65)	-0.003 (-0.51)	0.001 (0.20)	0.001 (0.25)	-0.007 (-1.17)	-0.007 (-1.15)	-0.008 (-1.43)	-0.007 (-1.41)
INDUSTRY	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
OBSERVATIONS	11,059	11,059	9,300	9,300	6,687	6,687	5,620	5,620	4,070	4,070	3,188	3,188
R <sup>2</sup>	0.047	0.051	0.005	0.005	0.081	0.088	0.007	0.008	0.019	0.019	0.018	0.018

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