

Equity Incentive Schemes, Investor Protection and Corporate Performance: Evidence from China

Abstract

We explore the impact of equity incentives and regional investor protection on corporate payout policies and corporate performance. Despite the fact that some managers appear to abuse equity incentives by increasing dividend payouts, we provide evidence suggesting that regional investor protection can potentially restrain such behavior. In all likelihood, the restraining effect depends on the firms' growth opportunities, on the basis of which the effect on cash (stock) dividends is found to be weaker (stronger) in high-growth firms – whose ability to pay cash dividends is limited by their appetite for cash for expansion – and stronger (weaker) in low-growth firms with a lower cash appetite. Further evidence indicates that the restraining effect of regional investor protection on selfish dividend-related behavior encouraged by equity incentives may also prove valuable in encouraging exploitation of these incentives so as to enhance corporate performance.

Keywords: Equity Incentive; Payouts; Investor Protection; Corporate Performance

1. Introduction

Equity incentives can alleviate agency problems but also provide managers with a channel to promote their own self-interest, without benefiting shareholders, by increasing payouts (Lambert et al. 1989; Jolls 1998; Bartov et al. 1998; Weisbenner 1998; Fenn & Liang 2001; Kahle 2002). The links between equity incentives and

“high sending and transferring chaos”¹ in firms’ dividend distributions are well documented in the existing literature (see, for instance, Lv et al. 2012; Xiao et al. 2012; Li et al. 2014; Chen & Guo 2017). In this context, the quality of investor protection and corporate governance are also positively related to both corporate dividends and corporate performance (La Porta et al. (hereafter LLSV) 2000; Kalcheva & Lins 2007; Jiraporn et al. 2011). While both equity incentives and investor protection can reduce agency costs, the mechanism through which this is manifested is totally different in each case. In the existing literature, the joint effect between equity incentives and investor protection on firm payouts and performance – especially in the same country, but different regions and under different investor protection levels – is totally ignored. In view of the lacuna in the existing literature, this paper therefore aims to examine the interaction effects between equity incentives and investor protection on corporate payout policy and corporate performance.

Consistent with previous research including Wang et al. (2008), Shen et al. (2009) and Tang & Chen (2010), we utilize an indicator from Fan et al. (2015) *China Marketization Index*. This marketization index consists of five sub-indicators, out of which we focus on the fifth, that we believe is closely related to the degree of protection given to investors in various regions, and to the variables incorporated in this study. We envisage the following channels being captured by this index: the more developed are intermediaries in a region, the higher the efficiency of law enforcement; and the better the legal environment, the more likely, timely and severe will be the punishment imposed by the local authorities for illegal behavior. Firms fearing punishment should therefore be more strongly deterred from harming minority shareholders’ interests, and thus behave more consistently with those interests, where

¹ "High sending and transferring chaos" refers to a large proportion of listed firms sending bonus shares or a large proportion of capital reserve funds to increase stocks, such as 10 shares for every 10 shares, 5 shares for every 10 shares, or even 30 shares for every 10 shares, and so on. The “high sending and transferring” program in the Chinese stock market is “unusually global”, and the CSRC has paid close attention to this kind of behavior exhibited by enterprises. The main reason is that those firms have no actual performance support, and are just using to carry out the transfer of benefits (Li et al. 2014).

the legal environment is well developed.

Our estimates show that, while managers of some firms that have adopted equity incentives can abuse them by selfishly increasing dividend payouts, regional investor protection can restrain such behavior. Additional analysis suggests that this restraining effect depends crucially on firms' growth opportunities. That is, the effect on cash (stock) dividends is weaker (stronger) in high-growth firms – whose ability to pay cash dividends is limited by their appetite for cash for expansion – and stronger (weaker) in low-growth firms with lower cash appetites. Further evidence indicates that the restraining effect of regional investor protection on selfish dividend-related behavior encouraged by equity incentives may also prove valuable in encouraging the exploitation of these incentives to enhance corporate performance. Our paper contributes to the existing literature that touches on the equity incentive effect on firm payout policy by exploring the role of investor protection, and the effect that this might have on corporate payouts and corporate performance.

This study focuses on the Chinese market for three main reasons. First, China is one of the largest emerging economies in the world, and a place where firms expand at a prodigious rate, reaching unprecedented levels of performance. The success of the Chinese economy acts as a magnet for international inflows of capital, thus raising expectations for future returns. Given the idiosyncratic nature of the Chinese stock market, it is also intended that this study will inform potential global investors of the inherent functional aspects of the stock market.

Second, according to the World Bank's *Doing Business Database*², China's investor protection is weak. Investor protection, however, varies regionally across the 31 provinces of mainland China. China Securities Investor Protection Fund Corporation's (SIPF's)³ *2010-2017 Investor Protection Report for Listed Firms in China* indicates that different levels of investor protection are significantly higher in economically developed southeast coastal areas like Guangdong, Zhejiang, and Beijing than in less developed western regions, such as Gansu and Tibet, which

² <https://datacatalog.worldbank.org/dataset/doing-business>.

³ <http://www.sipf.com.cn/dcpj/tbzkpj/>.

ranked the lowest. In China, although all provinces are formally required to implement nationally promulgated laws and regulations, in practice the enforcement and effect of these legal provisions differs from region to region, depending on regional legal environments. Thus, regional levels of investor protection also differ. This paper therefore seeks to take advantage of the great disparity in regional levels of investor protection across China, by examining whether this has different impacts on corporate payout policies and performance than the country-level investor protection and firm-level corporate governance factors, which have already been studied in the existing literature.

Thirdly, given that other emerging economies share the same characteristics as China, this study can provide a blueprint on how taking effective measures to strengthen the regional investor protection level can also promote the development of the local economy. In countries where investor protection is weak overall, policies designed to improve regional investor protection that improving the efficiency of legal systems should remain a priority item on regional policy makers' agendas. Because improving regional levels of investor protection would be more feasible and effective than reforming the legal mechanisms at a country level.

This paper makes three main contributions. First, we study the association of the interaction between equity incentives and regional investor protection with corporate dividends and performance, whereas previous research has mostly studied the impact of these items on dividends and performance individually. We find that regional investor protection has a restraining effect on self-interested managerial behavior encouraged by equity incentives *vis a vis* dividend policy, and on performance. This study thus enriches the extant literature. Second, we use a regional index of investor protection to study the impact this factor has on corporate dividends and performance, in contrast with most previous studies, which have examined these issues at country or individual firm levels. Our index is also different from those adopted in most of the earlier research. LLSV's (2000) "Anti-director-rights index" and Djankov et al. (2008) "Anti-self-dealing index" mainly reflect the protection of investors in terms of the voting rights of majority investors or boards of directors, subscription rights of

preferred shares, legal levels of compensation, and private legal enforcement mechanisms. By contrast, the regional investor protection index mainly reflects protection for investors stemming from the legal system/environment prevailing in their region. The use of a regional-level investor protection index in this paper therefore fills a gap by coming in between the country- and firm-level indicators typically used in previous research, thus providing a new perspective on investor protection issues. Third, this paper has important policy implications, since reforming investor protection laws and improving judicial quality is difficult and lengthy at a country level. Improving regional levels of investor protection, however, seems more feasible and effective. Through measures encouraging the development of intermediaries, increases in the number of lawyers, improvements in the efficiency of law enforcement and so on – all of which seem likely to constrain behavior harmful to the interests of investors – the provincial administrations can reasonably expect to contribute towards improvements in the performance of firms and the development of the economy in their region. We hope this paper provides encouragement to regional policy makers, in this regard, in China and in other developing countries where investor protection is weak overall.

The remainder of the paper is organized as follows: Section 2 reviews the relevant literature and section 3 touches on the development of the research questions. Section 4 elaborates on the empirical framework of analysis whilst section 5 presents and discusses the results. Finally, section 6 provides some concluding remarks.

2. Brief literature review

2.1 Equity incentives, payouts and corporate performance

In the extant literature, there is ample evidence to suggest that there is a relationship between equity incentives and payouts, with many studies establishing a strong negative (positive) influence of executive stock options on dividends (repurchases) in US firms (Lambert et al. 1989; Jolls 1998; Bartov et al. 1998; Weisbenner 1998; Fenn & Liang 2001; Kahle 2002). In Europe, however, dividend protection of stock options is common. Liljeblom & Pasternack (2006), De Cesari &

Ozkan (2014) and Burns et al. (2015) find that firms with executive stock options, in countries where these are dividend protected, tend to pay higher – not lower – dividends, and managers' total compensation is insignificantly associated with repurchases. In China, where options are dividend protected, evidence indicates that equity incentive schemes have a *positive* impact on dividend payouts (Lv et al. 2012; Xiao & Yu 2012 ; Chen & Guo 2017).

Equity incentives have restricted stock and stock options in two main ways. Aboody & Kasnik (2008) find that equity incentives in the forms of restricted stock and stock options may have different effects on payout policy. They argue that individual income tax plays a more important role for dividend-protected restricted stock, with managers being interested in improving the dividend payment rate and offering more choices of restricted stock.

Executives can leverage the market's "price illusion" to gain further benefits from stock dividends or splits. McNichols & Dravid (1990), Ikenberry et al. (1996) and Desai & Jain (1997) find that, in US stock markets, stock dividends and stock splits can bring about long-run abnormal excess returns.

On the issue of whether equity incentives effect corporate performance, Morgan & Poulsen (2001) indicate that the returns on assets of firms introducing equity incentives increase after one year, whilst Core & Larcker (2002) and Kato et al. (2005) suggest that firms' operating performance and dividend yields increase significantly after the adoption of equity incentive plans.

2.2 Investor protection, payouts and corporate performance

LLSV (2000) find that stronger investor protection has a positive influence on dividend payouts at a country level. In the same spirit, Kalcheva & Lins (2007) and Jiraporn et al. (2011) provide evidence suggesting that the quality of investor protection has a significant impact on dividend policy at the individual firm level. Klapper & Love (2002) find that firm-level corporate governance matters more in countries where shareholder protection is weak and judicial efficiency is poor.

When considering growth opportunities, LLSV (1997) find that, where investor protection is weak, investors are less willing to provide financing. This may pose a

problem for high-growth firms in such regions, and firms with high-growth potential, which are more likely to need external funds, may pay higher dividends to maintain a favorable reputation (Durnev & Kim, 2005). Finally, Lombardo & Pagano, (2000); La Porta et al. (1999); Daines, (2001) found that firms' performance is related to their legal environment at international, country and state levels.

3. Research question development

3.1 Equity incentives, regional investor protection and payouts

In China, options are dividend protected. When Chinese firms distribute cash dividends, the exercise prices of their stock options are adjusted according to the following formula:

$$P = P_0 - V$$

where P_0 is the option exercise price before adjustment, P is the exercise price after adjustment, and V is the cash dividend per share. Thus, the distribution of dividends does not reduce the value of protected options, and Chinese firms' executives owning dividend-protected options face different incentives regarding profit distribution schemes than do the executives of firms in the US.

Agency theory suggests that those who control firms take into account their own interests, as well as those of their principals. Investor protection is therefore necessary to protect investors from expropriation by firm insiders. Empirical research indicates that, where firms provide equity incentives as part of executive compensation packages, executives can maximize their own benefits through manipulation of payout policies (Lv et al. 2012; Xiao & Yu 2012; Chen & Guo 2017). Where legislation exists to protect minority shareholders, its deterrent effect is dependent on both the efficiency of its enforcement and the severity of its penalties. In regions with strong investor protection, firms' executives may be effectively deterred by minority shareholder protection legislation; their self-interested use of payout policies may therefore be somewhat restricted. Thus, we might expect firms with equity incentive schemes, from regions with strong investor protection, to have relatively lower dividend payouts. This forms the basis of **Hypothesis 1**:

Regional investor protection has a restricting effect on managers' tendency to raise payouts in the form of cash dividends and buybacks. The stronger the investor protection in a region, the lower the propensity for firms offering equity incentives to make payouts.

3.2 Equity incentives, regional investor protection and growth opportunities

When we take into account the growth opportunities of firms, will this restrictive effect of investor protection lead to differentiation in dividend payout policies? Will the effects on cash and stock dividends be the same? High-growth firms will reduce cash dividends to support their development. Therefore, we suggest that the restrictive effect of investor protection on cash dividends will be weaker in high-growth firms than in low-growth firms. This is **Hypothesis 2a**:

The restricting effect of investor protection on payouts will differ depending upon firms' growth potential, decreasing where growth potential is stronger, and increasing where growth potential is weaker.

Because stock dividend and stock split behavior convey information regarding the optimism of firms' management – i.e. they are more likely when rapid earnings growth and stock price increases are expected – it is argued that the long-run positive excess returns for Chinese firms announcing stock dividends, confirm that stock dividends serve as a positive signal regarding firms' prospects. The greater investors' preference for low unit stock prices, the more managers can increase their firms' market capitalization via stock dividends or splits (Baker et al. 2009). High-growth firms thus face incentives to increase stock dividends, leveraging "price illusion" to boost market capitalization and managers' compensation, while low-growth firms do not face such strong incentives. Therefore, the restricting effect should be stronger for high-growth firms, and weaker for low-growth firms, our **Hypothesis 2b**:

The restricting effect of strong investor protection on stock dividends is stronger under higher levels of growth potential, and weaker under lower levels of growth potential.

3.3 Stock options, restricted stock and regional investor protection

In China, although stock options are dividend protected, and dividends are thus reflected in the exercise prices of stock option incentives, executives holding stock options rather than restricted shares do not directly receive cash dividends on them. By contrast, with restricted stock, cash dividends are paid directly to executives, increasing their cash assets. In addition, China's income tax rate on cash dividends is far lower than that on gains resulting from the exercise of stock options. So, other things being equal, the use of restricted stock can significantly increase firms' levels of cash dividend distribution relative to stock options. However, if the level of regional investor protection has a restricting effect on managers' self-interested tendency to increase dividends, this might mitigate the differences between firms' cash dividend payout policies in situations where restricted stock equity incentives are in place and those where stock option equity incentives are in place.

The index of regional investor protection we adopt is based on the quantity of legal intermediary organizations, and the quality of the legal environment, in different Chinese provinces. In any given region, more developed intermediary organizations, more efficient law enforcement, and a better legal environment can all act as factors deterring firms from harming the interests of shareholders. We therefore speculate that the restricting effect of investor protection via deterrence may moderate the magnitude of the effect that different forms of equity incentives – stock options versus restricted stock – have upon cash dividends. Thus, we propose research **Hypothesis 3**:

Use of restricted stock equity incentives results in higher cash dividend payout ratios relative to the use of stock options. This difference does not exist in the case of stock dividends, and where it exists it is moderated by the restricting effects of strong regional investor protection.

3.4 Equity incentives, regional investor protection and corporate performance

An abundance of studies has investigated the effects of managerial stock ownership on firm performance. Research suggests that executive equity incentives improve firm performance.

Most of the existing literature has used firm-level corporate governance data to examine the relationship between investor protection and firm performance (Gompers et al. 2003; Klapper & Love, 2002). We therefore speculate that the regional-level quality of investor protection may have an impact on corporate performance, similar to those of the country-level quality of investor protection and corporate governance at the individual firm level. By restricting self-interested dividend-payout-related behavior among managers, higher levels of regional investor protection may permit fuller exploitation of the synergy effects of equity incentives to motivate managers to work more effectively and improve corporate performance. Therefore, we propose research **Hypothesis 4:**

Regional investor protection may improve corporate performance via its restricting effects on self-interested behavior resulting from the use of equity incentives.

4. Empirical investigation

We obtained data on firms' equity incentives, payouts, cash/stock dividend dates and stock prices from CSMAR, a leading business data and information service company. We also collected most of the required firm characteristics from CSMAR, except for the institutional investor shareholding ratio, which we downloaded from the WIND database, excluding observations with invalid data. To build the additional variables, we complemented this dataset with market and accounting data from the Shanghai and Shenzhen Stock Exchange websites.

We collated data for the regional investor protection index (IPI) from the China Marketization Index Report. We imputed values for years with missing data (2013, 2016 and 2017) by means of linear interpolation or a linear trend extrapolation. We determined the number of lawyers in each province in China, by hand, from the *Chinese Yearbook of Lawyers*⁴ (2006-2017).

In order to deal with possible endogeneity in terms of the impact of equity

⁴ Data may be downloaded from: <http://www.tjcn.org/tjnj/III/>

incentives on payout policies and corporate performance, we use only the lagged values of the independent variable. Consistent with previous studies, we also exclude firms from the financial services and utilities sectors, since regulatory rules and restrictions can influence the payout policies of firms in those industries. We winsorize all payout and control variables at the 1st and 99th percentiles. Our final sample consists of an unbalanced panel, with 2776 firms and 24724 firm-year observations.

4.1 Variables and descriptive statistics

4.1.1 Payout, performance, investor protection and control variables

The dependent variables reflect cash dividends, stock dividends and corporate performance. Our primary measures of firm payouts are the cash dividend to assets ratio, and the stock dividend to asset ratio. For robustness, we also use an additional proxy i.e. dividend yield (payout ratio) which is dividend scaled by stock price (earnings). Follow prior literatures, we measure corporate performance using profitability: firms' EBITDA to assets ratios (or return on assets - ROA); Tobin's Q: the market capitalization of the firm's stock plus debt, divided by total assets. We encode equity incentives as a dummy variable, assigning one for non-zero incentives, and zero for zero incentives. We similarly encode stock options as a dummy variable: one for a stock option scheme, and zero otherwise.

For the regional IPI, we adopt the fifth component of the China Marketization Index, which is designed to capture the "development of market intermediaries and the legal system/environment". Yu & Pan (2008) and Pan et al. (2009) find that the ratio of the number of lawyers to the local population reflects the efficiency of law enforcement in different regions. We also used (the logarithm of) the number of lawyers in each province each year as a substitute IPI, to check the robustness of our regressions to the measure of investor protection, which is critical to our main hypotheses.

Given that, in the extant empirical literature, there is a relationship between

payouts and a variety of firm characteristics, we include as independent control variables in our regression equations, firm size, profitability, growth opportunities, cash holdings, leverage, risk, firm age, retained earnings, and institutional ownership. Fama & French (2001) find that firm size, as measured by the logarithm of assets, is positively related to payout. We thus include a measure of firm size, the logarithm of assets (Log Assets), in our regression equations. Firms with higher profitability tend to have more free cash flow available to finance payouts (Aboody & Kasnik 2008). We thus include a measure of profitability, ROA, as defined above. We also include a proxy for growth opportunities, Tobin's Q, as defined above. It seems likely that cash holdings may also have an important influence on payout policy. We thus include the ratio of cash holdings to total assets (Cash Ratio). Since Jensen (1986) contends that higher debt reduces free cash flows, reducing the cash available to be paid out to shareholders, we include the Debt Ratio (total debt divided by assets). Kahle (2002) suggests that riskier firms tend to avoid paying large dividends, preferring instead to use repurchases as a way of returning free cash flow to investors. In view of the latter, we incorporate a measure of risk, the standard deviation of monthly returns over the fiscal year (SD Return). In view of DeAngelo et al.(2006) findings i.e. that firm's life cycle may affect its payouts, we also add age of firm (Age) and Retained Earnings as control variables. Institutional ownership has also been shown to be positively related to payout policy, for two possible reasons, according to Short et al. (2002): First, institutions may demand high levels of dividends to force firms to seek external funding and hence subject themselves to more rigorous external monitoring. Second, institutional shareholders may counter management's tendency to retain excess free cash flow. We thus include the percentage of institutional ownership (Inst % Owned) as an independent variable.

Table 1 contains a summary of the definitions of payout, corporate performance, regional investor protection and the control variables used in our empirical analysis.

[INSERT TABLE 1 AROUND HERE]

4.2 Descriptive statistics

Table 2 lists the number of firms in each province by year.

[INSERT TABLE 2 AROUND HERE]

Following Guariglia & Yang (2016), we divide the 31 provinces into three regions: coastal, central and western. The eastern coastal provinces include Guangdong, Jiangsu, Shandong, Zhejiang, Hebei, Hainan, Fujian, Liaoning, Beijing, Shanghai, and Tianjin, the most economically developed provinces in China, which together account for over 66.9% of all the listed firms in the dataset at the end of 2017. The central region includes Jilin, Anhui, Shanxi, Jiangxi, Henan, Hubei, Hunan, Heilongjiang, and Chongqing, accounting for 18.1% of the listed firms. The western region includes Yunnan, Inner Mongolia, Sichuan, Ningxia, Guangxi, Xinjiang, Gansu, Tibet, Guizhou, Shaanxi, and Qinghai, accounting for the final 15% of the listed firms.

[INSERT FIGURE 1 AROUND HERE]

Figure 1 shows the distribution of the regional IPI, which we classify into four categories: $IPI \geq 10$ is defined as strong, $10 > IPI \geq 6$ as relatively strong, $6 > IPI \geq 3$ as general, and $IPI < 3$ as weak investor protection. In terms of distribution, Shanghai, Zhejiang, Jiangsu and Beijing are the areas with strong investor protection; Guangdong, Fujian, Anhui, Shandong, Sichuan, and Chongqing those with relatively strong investor protection; Guangxi, Yunnan, Hunan, Hubei, Jiangxi, Henan, Hebei, Shanxi, Shaanxi, Tianjin, Liaoning, Jilin, and Heilongjiang those with general investor protection; and finally, Guizhou, Inner Mongolia, Gansu, Ningxia, Tibet, Xinjiang, Qinghai, and Hainan those with weak investor protection.

[INSERT TABLE 3 AROUND HERE]

Table 3 reports summary statistics for variables used in our estimates. Panel A focuses on the payout and incentive variables of the entire dataset, giving the number

of observations, mean, median, and standard deviation. Average cash and stock dividend payouts are 1.06% and 0.34% of assets respectively. The mean value for Payout ratio is 1% on stock price. 13.1% of firms in our sample used equity incentive schemes of any form between 2006 and 2017. Panel B reports these statistics for the subset of firms that used equity incentive schemes, for which options and restricted stock represent 1.26% and 0.59% of total assets on average, while payout ratio is 0.9% on average. In this equity incentive subsample, 41.9% of firms used stock options, while 58.1% used restricted stock.

[INSERT TABLE 4 AROUND HERE]

Table 4 provides summary statistics for the firm characteristics. In our full sample, the mean Cash Ratio is 18.9% of assets, mean Log Assets are 21.89 RMB, and the mean Debt Ratio is 45.3%. The mean values for Tobin's Q and ROA are 2.56% and 3.7%, respectively. The average institutional ownership of firms in our sample is 33.5%. The average age of firm is 10.28 years old. The mean values for retained earning is 0.11. In our equity incentives subsample, the mean Cash Ratio is 20% of assets, slightly higher than that for the complete sample. The mean values of Tobin's Q and ROA are also higher than in the complete sample, by 0.57 and 1.7 percentage points, respectively. The mean Debt Ratio is 39%, 6.3 percentage points lower than in the complete dataset. Average institutional ownership of firms in the equity incentives subsample is 32.1%, 1.4 percentage points lower than in the complete dataset. Average age of firm is 8.05 and 2.23 year shorter than in the complete sample. The mean values for retained earnings is 0.197 and 8.7 percentage points higher than in the complete sample.

[INSERT FIGURE 2 AROUND HERE]

Figure 2 illustrates trends in the firms' adoption of stock option and restricted stock incentive schemes over 2006-2017. In 2010, nearly 70% of equity incentives

were in the form of stock options, with the balance gradually shifting to restricted stock, which became prevalent by around 2014. By 2017, restricted stock was dominant, accounting for over 70% of equity incentives, while less than 30% of firms were using stock options.

5. Empirical results

We examine the relationship between incentives and regional investor protection in influencing payouts and corporate performance, in a framework controlling for firm-specific effects and regional measures. In all specifications, we report a White heteroskedastic-consistent estimator, adjusted for clustering at the firm level (Andrews 1991; Zeileis 2004), and include year, industry, firm and region fixed effects. Clustering standard errors by firm and including year fixed effects minimizes bias in standard errors due to firm and time effects (Petersen 2009). We use the following ordinary least squares (OLS) regression model:

$$\begin{aligned} \text{Payout}_{i,t+1} = & \beta_0 + \beta_1 \text{Incentive}_{i,t} + \beta_2 \text{IPI}_t + \beta_3 \text{Incentive}_{i,t} \times \text{IPI}_t \\ & + \beta_{4-14} \text{Firm Characteristics}_{i,t} + \text{year}_i + \alpha_t + \varepsilon_{i,t} \end{aligned} \quad (1)$$

Here, subscripts i and t index firm and year respectively. Our payout measure is either cash or stock dividends (divided by the total book value of assets). Our equity incentive measure (Incentive) is equity incentives or its separate components – options and restricted stock, once again divided by total assets – in the year prior to the payout. Our regional IPI measure is a score representing market intermediaries and the legal environment in each region. Firm characteristics include Log Assets, Debt Ratio, Cash Ratio, ROA, Tobin's Q, Inst % Owned, and SD Return, Age, Retained earnings, each measured in the year prior to the payout.

5.1 Evidence of interaction between equity incentives' and regional investor protection's effects on payouts

In order to examine interactions between the effects of equity incentives and

regional investor protection upon firms' cash or stock dividend payouts, we run the following regressions:

$$\begin{aligned} \text{Cash}_{it+1} = & \beta_0 + \beta_1 \text{Incentive}_{it} + \beta_2 \text{IPI}_t + \beta_3 \text{Incentive}_{it} \times \text{IPI}_t \\ & + \beta_{4-14} \text{Firm Characteristics}_{it} + \text{year}_i + \alpha_t + \varepsilon_{it} \end{aligned} \quad (2)$$

$$\begin{aligned} \text{Stock}_{it+1} = & \beta_0 + \beta_1 \text{Incentive}_{it} + \beta_2 \text{IPI}_t + \beta_3 \text{Incentive}_{it} \times \text{IPI}_t \\ & + \beta_{4-14} \text{Firm Characteristics}_{it} + \text{year}_i + \alpha_t + \varepsilon_{it} \end{aligned} \quad (3)$$

Here, all variables are defined as in Table 1.

[INSERT TABLE 5 AROUND HERE]

Table 5 presents the results of these regressions. Columns (1)-(3) estimate the probability that firms pay cash dividends, with cash dividend payouts as the dependent variable. Each model includes equity incentives as the independent variable of primary interest, and investor protection as a further explanatory variable. In column (1), we control for region, industry and year effects, yielding a coefficient on Incentive of 0.058, with a p-value significant at the 10% level, indicating that equity incentives tend to increase the proportion of firms paying cash dividends, consistent with previous findings in the classic literature. In column (2), controlling only for firm and year effects, the coefficient on Incentive is 0.171, significant at the 5% level. Meanwhile, the coefficient on regional IPI is -0.012, significant at the 10% level. The coefficient on the interaction between equity incentives and regional investor protection (EI*IPI), although smaller at -0.024, is significant at the 1% level. In column (3), with fixed effects for region, industry and year once again, the coefficients on Incentive and IPI are 0.103 and 0.009, respectively, both insignificant, suggesting that these variables have less impact on the cash dividend policy after controlling for region. Meanwhile, however, the coefficient on the interaction between equity incentives and regional investor protection (Incentive*IPI) is -0.016, significant at the 5% level. This implies a 1.6% decrease in the cash-dividend-paying proportion of firms for every 1% increase in regional investor protection where firms

have adopted equity incentives. Columns (4) through (6) repeat these regressions, but use stock dividends as the dependent variable. In column (6), the coefficient on Incentive is 0.199, significant at the 1% level. The coefficient on IPI is far smaller, at -0.001, and not significant. However, the interaction coefficient between equity incentives and regional investor protection (Incentive*IPI) is far larger (-0.013) and significant at the 5% level: where firms have adopted equity incentives, a 1% increase in regional investor protection is associated with a 1.3% decrease in the stock-dividend-paying proportion of firms. We thus conclude that strengthened regional investor protection reduces the proportion of both cash and stock dividend payouts: in terms of both statistical and economic significance, regional investor protection restrains the self-interested motivation – created by equity incentives – for management to set high levels of dividend payouts. Further, the higher the degree of regional investor protection, the larger the magnitude of this restraining effect. This is consistent with Hypothesis 1.

Our results are thus consistent with previous evidence that equity incentives have positive effects on cash and stock dividends (repurchases) if they are dividend protected (Liljeblom & Pasternack 2006; De Cesari & Ozkan 2014; Burns et al. 2015; Xiao & Yu 2012; Chen & Guo 2017). However, the fact that higher levels of regional investor protection are not associated with higher dividend payouts in our framework suggests that the regional IPI we have used is inconsistent with the country-level index adopted by LLSV (2000), and the individual firm-level indices used by Kalcheva & Lins (2007) and Jiraporn et al. (2011). This might be due to the fact that the regional IPI reflects the efficiency of law enforcement and the law enforcement environment, and thus mainly reduces firms' behavior inimical to the interests of minority shareholders through a deterrence effect.

With respect to the control variables, our results show more profitable firms are more likely to pay cash and stock dividends, a result consistent with Aboody & Kasnik (2008). Those with higher leverage are less likely to pay cash dividends, and pay smaller stock dividends, consistent with Kahle (2002). Firms with greater risk tend to pay lower cash dividends but risk has a significantly positive impact on stock

dividends, consistent with Kahle's (2002) conclusion that riskier firms tend to favor repurchases over cash dividends as a way of paying out free cash flow to investors. In our results, larger firms are less likely pay cash and stock dividends, a finding inconsistent with both Fama & French (2001) and Burns et al. (2015). This may stem from differences between capital market participants in China and those in more advanced economies, like the US and OECD countries; further research will be necessary for a deeper understanding of this point. Columns (1)-(6) all show a significantly positive relationship between cash holdings and the likelihood of dividend payouts. This is consistent with Jensen (1986), but inconsistent with Opler et al. (1999), Almeida et al. (2004) and Boyle & Guthrie (2003), who all argue that, possibly due to precautionary demands, firms with a greater need to hold cash balances are less likely to pay out dividends. Institutional ownership is associated with an increase in the likelihood of a firm paying both cash and stock dividends, consistent with Short et al. (2002). Our results show retained earnings is significant and positively correlated to both cash and stock dividends, while firm age has a negative impact on the propensity of payouts, which is consistent with DeAngelo et al.(2006).

5.2 Dividends, regional investor protection and growth opportunities

To explore whether the joint effects of equity incentives and regional investor protection on payouts are altered in the presence of growth opportunities, we run the following regression:

$$\begin{aligned} Dividend_{it+1} = & \beta_0 + \beta_1 Incentive_{it} + \beta_2 High\ Q_t + \beta_3 IPI_t + \beta_4 Incentive_{it} \times High\ Q_t + \\ & \beta_5 IPI_t \times High\ Q_t + \beta_6 Incentive_{it} \times IPI_t + \beta_7 Incentive_{it} \times High\ Q_t \times IPI_t + \\ & \beta_{8-14} Firm\ Characteristics_{it} + year_i + \alpha_t + \varepsilon_{it} \end{aligned} \quad (4)$$

Here, dividends are either cash or stock dividends, scaled by assets. The High Q includes firms with Tobin's Q scores above the average level, based on year and province; Low Q includes those with scores below the average. Equity incentives

(Incentive), regional investor protection (IPI) and the control variables (Firm Characteristics) are as defined in Table 1. The results are shown in Table 6.

[INSERT TABLE 6 AROUND HERE]

Table 6 Panel A presents the results of regressions in which cash dividends are the dependent variable. Columns (1) and (2) give the results for the subsample of low-growth firms, columns (3) and (4) those for the high-growth firms. In column (1), firm and year are treated as fixed effects; region, industry and year are treated as fixed effects in column (2). The results show that the coefficients for equity incentives (Incentive) and regional investor protection (IPI) are significant at the 5% level in the low-growth subsample; the coefficient on their interaction (Incentive*IPI) is significant at the 1% level. However, these coefficients are not significant in the high-growth subsample, suggesting that, when faced with growth opportunities, managers' interests are best served by limiting cash dividend payouts and retaining cash to fund firms' development – an observation novel to the existing literature. Columns (1) and (2) show that equity incentives and regional investor protection (Incentive*IPI) jointly have a very significant negative correlation with cash dividends at low growth levels, while there is no significant correlation in the high-growth subsample. This suggests that low-growth firms' managers have a tendency to pay out high cash dividends, but that regional investor protection has a strong restricting effect on this self-interested behavior. The interaction coefficient implies that, for every percentage point increase in the regional IPI, the cash dividend payout proportion decreases by 2.2%, supporting Hypothesis 2A.

Table 6 Panel B presents the results of regressions in which stock dividends are the dependent variable. Based on these, the independent variables' effects on stock and cash dividends are complete opposites. Equity incentives (Incentive) and their interaction with regional investor protection (Incentive*IPI) are significant in the high-growth subsample, at the 1% and 5% levels respectively, even though regional investor protection (IPI) is less significant, and not significant at all in the low-growth

subsample. A one percentage point increase in regional investor protection is associated with a 1.7% reduction in stock dividends. This result suggests that managers in firms with good growth opportunities are more inclined to increase stock dividends. There are several possible explanations for this: managers may be using stock dividends as a mechanism for signaling positive information to the capital market, which then has further beneficial effects on their firms' ability to raise external funds. Alternatively, they may be using "price illusion" to maximize market capitalization (and thus their own interests). The results indicate that regional investor protection can constrain this behavior, supporting Hypothesis 2B.

When we take growth opportunities into account, the restraining effects of regional investor protection on managers' self-interested use of equity incentives is polarized, and depends on the form of dividend distribution. For cash dividends, this restraint decreases (increases) as firm growth potential increases (decreases). For stock dividends, the restraining effect increases (decreases) with increasing (decreasing) firm growth potential.

5.3 Stock options, restricted stock and regional investor protection

We run regressions including payout measures for firms using stock options and restricted stock, to examine the differential effects of these two forms of equity incentives on dividend payouts under different levels of regional investor protection:

$$\begin{aligned}
 &Cashdividends_{it+1} \\
 &= \beta_0 + \beta_1 option_t + \beta_3 IPI_t + \beta_3 option_t \times IPI_t \\
 &+ \beta_{5-14} Firm\ Characteristics_{it} + year_i + \alpha_t + \varepsilon_{it}
 \end{aligned} \tag{5}$$

$$\begin{aligned}
 &Stockdividends_{it+1} \\
 &= \beta_0 + \beta_1 option_t + \beta_3 IPI_t + \beta_3 option_t \times IPI_t \\
 &+ \beta_{5-14} Firm\ Characteristics_{it} + year_i + \alpha_t + \varepsilon_{it}
 \end{aligned} \tag{6}$$

$$\begin{aligned}
 &Cashdividends_{it+1} \\
 &= \beta_0 + \beta_1 restricted_t + \beta_3 IPI_t + \beta_3 restricted_t \times IPI_t \\
 &+ \beta_{5-14} Firm\ Characteristics_{it} + year_i + \alpha_t + \varepsilon_{it}
 \end{aligned} \tag{7}$$

$$\begin{aligned}
& Stockdividends_{it+1} \\
& = \beta_0 + \beta_1 restricted_t + \beta_3 IPI_t + \beta_3 restricted_t \times IPI_t \\
& + \beta_{5-14} Firm\ Characteristics_{it} + year_i + \alpha_t + \varepsilon_{it}
\end{aligned}
\tag{8}$$

Here, cash dividends is cash distributions scaled by assets, stock dividends is stock dividends scaled by assets, and stock options is a dummy variable equal to one for stock option equity incentive schemes, and zero otherwise. The variable representing the level of regional investor protection (IPI), and other control variables, are as defined in Table 1.

[INSERT TABLE 7 AROUND HERE]

Table 7 shows the regression results. Columns (1)-(3) use cash dividends as the dependent variable. In columns (1) and (3), region, industry and year are treated as fixed effects, while in column (2) only firm and year are treated as fixed effects. In column (1), the regression coefficient for the stock options variable is -0.146, a negative correlation significant at the 5% level, indicating that the cash dividend ratio associated with stock options is lower than that for restricted stocks, consistent with Aboody & Kasnik (2008) and Chen & Guo (2017). Columns (2) and (3) show the interaction effects between stock options (option) and regional investor protection (IPI): for cash dividends, the regression coefficient for stock options is -0.456, once again negative, and here significant at the 1% level. The regression coefficient for IPI is 0.033 – not significant – but the coefficient on the interaction of the two (option*IPI) is 0.03, a positive correlation significant at the 10% level. Figure 1, above, showed that managers of Chinese firms are increasingly likely to use restricted stocks as equity incentives. The reason is obvious: the use of restricted stock, combined with payments of higher cash dividends, allows them to directly increase their own cash assets more quickly than the use of stock options. The degree of protection of regional investors also has a restraining effect on this self-interested behavior. Every percentage point increase in the regional investor protection index is associated with a

reduction in the difference in cash dividends between firms using restricted stock and those using stock option equity incentives, of 3%. Columns (4)-(6) show the results when using stock dividends as the dependent variable. Here, the coefficients on stock options (option), regional investor protection (IPI), and their interaction (option*IPI) are not significant. Nor is there a significant difference between the effects of restricted stocks and stock options on stock dividends. We surmise that the main reason for this is that stock dividends do not immediately satisfy managers' interests and thus are not within the scope of their self-interested motivation.

Overall, the cash dividend ratio for firms using restricted stock equity incentives is higher than that for those using stock options – a tendency which regional investor protection can reduce – but this phenomenon is not significant with respect to stock dividend distributions. This result is therefore consistent with Hypothesis 3.

5.4 Equity incentives, regional investor protection and corporate performance

In order to better understand the effects of interactions between equity incentives and regional investor protection on corporate performance, we run the following regressions:

$$ROA_{it+1} = \beta_0 + \beta_1 Incentive_{it} + \beta_2 IPI_t + \beta_3 Incentive_{it} \times IPI_t + \beta_{4-13} Firm\ Characteristics_{it} + year_i + \alpha_t + \varepsilon_{it} \quad (9)$$

$$Tobin's Q_{it+1} = \beta_0 + \beta_1 Incentive_{it} + \beta_2 IPI_t + \beta_3 Incentive_{it} \times IPI_t + \beta_{4-13} Firm\ Characteristics_{it} + year_i + \alpha_t + \varepsilon_{it} \quad (10)$$

Here, ROA, Tobin's Q, Incentives, IPI and other control variables are as defined in Table 1.

[INSERT TABLE 8 AROUND HERE]

Table 8 presents the results. In the first three columns, ROA is the dependent variable. In columns (1) and (3), we treat region, industry and year as fixed effects, while in column (2), we treat firm and year as fixed effects. In column (1), the coefficient for equity incentives (Incentive) is 0.012 – a positive correlation

significant at the 1% level – suggesting that equity incentives tend to improve ROA, which is consistent with the classical literature. In column (3), taking the interaction effect into account, the coefficients of Incentive and IPI are 0.003 and 0.001 respectively, and not statistically significant, but the coefficient on the interaction of the two (Incentive*IPI) is 0.001, significant at the 10% level and positive. This indicates that regional investor protection can act in synergy with equity incentives, allowing them to play a positive role in improving firms' ROA. In columns (4)-(6), Q is the dependent variable. In column (4) the coefficient on Incentive is 0.445 – positive and significant at the 1% level. This suggests that equity incentives can promote corporate growth. This conclusion is consistent with the existing literature. In column (6), the coefficients on Incentive, IPI and their joint effect (Incentive*IPI) are 0.202, 0.026 and 0.024, respectively – positive correlations significant at the 5%, 5% and 1% levels respectively. This suggests that equity incentives and regional investor protection can individually promote firms' growth, and the combination of the two is most effective of all.

In sum, these regression results are consistent with our contention that regional investor protection can improve firms' ROA and Tobin's Q ratios by exerting restraining effects on the self-interested behavior that equity incentives encourage among managers with respect to dividend payout policies. This synergistic effect allows equity incentives to be given full play, improving firms' performance overall, consistent with our fourth hypothesis.

5.5 Robustness

This subsection briefly describes the results of some robustness checks we performed on our findings. Referring to the previous literature, we ran regressions replacing our preferred measure of cash dividends with payout ratio (cash dividend scaled by stock price and multiplied by 100), and replacing our preferred measure of regional investor protection ("market intermediaries and legal system/environment" with a simpler measure, the natural logarithm of the number of lawyers in each province, because the number of lawyers in a region is also a reflection of that

region's law enforcement environment, and the efficiency of enforcement in China. The results from these robustness tests support the contention that the main models established in this paper are robust, and the conclusions drawn from them reliable (due to space limitations, we do not list the robust results) .

6. Conclusion

This paper uses the fifth component from Fan et al. (2015) China Marketization Index – legal intermediaries and law enforcement environment – as an index of regional investor protection, in combination with panel data on Chinese firms for 2006-2017, to explore the joint effect of equity incentives and regional investor protection on corporate dividend policy and corporate performance in China, where equity incentives are generally dividend protected. The results suggest that the managers of firms adopting equity incentives tend to act in their own interests, increasing their cash receipts by increasing dividend distributions, as measured by cash dividend payout ratios. This conclusion is consistent with previous findings in the classic literature on American, European and Chinese firms. By analyzing the interaction between equity incentives and regional investor protection, we find that regional investor protection has a significant restraining effect on this self-interested behavior. The stronger the degree of regional investor protection, the greater this effect.

Incorporating factors reflecting growth in the model equations, we find that the restraining effect is different depending on firms' growth opportunities. The restraining effect on cash dividends is significant for low-growth firms. Conversely, the restraining effect on stock dividends is significant in high-growth firms. In firms adopting restricted stock equity incentives, cash dividends tend to be higher than in firms adopting stock options – a disparity not apparent for stock dividends. The results suggest that regional investor protection could also restrain this tendency, reducing the difference between cash dividend payouts in restricted stock versus stock option firms. Finally, our results suggest that this restraining effect can have a positive

effect on corporate growth and performance.

These results have important policy implications. The task of reforming investor protection laws and improving judicial quality can be difficult and lengthy, and require support from politicians and other interest groups. Compared with the reform of legal mechanisms at the country level, improving regional levels of investor protection would seem to be more feasible and effective. Our paper therefore suggests that, in countries where investor protection is weak overall, policies designed to improve regional investor protection, via improvements in regional legal environments, could be adopted, and that improving the efficiency of legal systems should remain a priority item on regional policy makers' agendas – both in China and elsewhere.

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Table 1: Variable Definitions

Variable	Definition
Cash Dividends	Ratio of total cash dividends paid out in the fiscal year to the book value of the firm's total assets
Payout ratio	Cash dividend scaled by stock price and multiplied by 100
Stock Dividends	Ratio of total value of stock dividends (repurchases and reserve transfers) paid out in the fiscal year to the book value of total assets.

	The total value is estimated as the number of stocks repurchased or involved in reserve transfers, multiplied by the closing price on the announcement or transfer date.
Equity Incentives (Dummy)	1 for non-zero equity incentives and 0 otherwise
Stock Options (Dummy)	1 for stock options 0 otherwise
IPI	Fifth indicator of regional degree of investor protection from <i>China Marketization Index</i> (Fan et al., 2015): "the development of market intermediaries and legal system/environment"
NUM	Logarithm of number of lawyers in a province reported in <i>Chinese Yearbook of Lawyers</i> (2006-2017)
Log Assets	Logarithm of firm assets
Debt Ratio	Firm total debt divided by assets
Tobin's Q	Firm's market capitalization plus debt, divided by total assets
High Q (Dummy)	1 if firm's Tobin's Q score is greater than the average based on year and province, and 0 otherwise
ROA	Ratio of firm's Earnings before Interest, Taxes, Depreciation, and Amortization (EBITDA) to total assets
SD Return	Standard deviation of monthly returns on a firm's stock over the fiscal year
Cash Ratio	Ratio of firm's cash to total assets
Inst % Owned	Percentage of firm's stock in issue held by institutions
Age	firm age
Retained earning	retained earning scaled total asset

Table 2: Geographical Distribution of Observations

Table 2 reports the distribution of firms in the sample, by province, annually over 2006–2017.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	total
Anhui	45	47	53	55	66	75	77	78	73	79	83	85	816
Beijing	79	83	91	103	160	191	218	211	224	245	258	262	2,125
Fujian	47	45	55	58	55	67	75	74	73	80	90	93	812
Gansu	18	17	20	20	17	19	20	21	22	21	25	26	246
Guangdong	138	149	176	189	246	302	338	335	343	381	416	425	3,438
Guangxi	20	22	24	23	23	25	28	29	26	32	35	31	318
Guizhou	19	19	19	19	21	23	23	24	24	24	27	27	269
Hainan	21	20	21	22	21	24	23	25	24	23	27	26	277
Hebai	30	29	32	33	37	44	46	46	45	47	48	48	485
Henan	28	33	37	39	48	57	63	62	59	68	67	68	629
Heilong	24	24	24	25	23	24	26	25	22	26	28	28	299
Hubei	56	54	57	60	67	73	78	78	76	78	86	83	846
Hunan	35	37	41	45	48	58	64	63	65	72	74	72	674
Jilin	29	28	31	32	35	40	38	40	41	40	42	41	437
Jiangsu	86	103	113	116	150	195	226	221	229	237	273	288	2,237
Jiangxi	23	24	25	24	29	30	32	32	31	33	34	35	352
Liaonin	46	43	48	51	48	53	58	57	57	65	62	60	648
Inner Mongolia	18	19	19	19	23	25	27	27	24	24	25	24	274
Ningxia	11	8	11	11	13	13	13	12	12	13	13	12	142
Qinghai	8	9	9	9	9	9	10	9	10	9	11	11	113
Shandong	71	78	89	92	118	140	148	149	143	152	162	157	1,499
Shanxi	26	25	26	26	30	30	31	32	33	35	36	34	364
Shaanxi	22	24	26	27	32	33	35	33	35	35	39	37	378

Shanghai	120	122	130	134	168	192	205	200	203	218	236	237	2,165
Sichuan	58	56	65	70	80	83	91	89	92	99	105	105	993
Tianjin	23	27	27	28	33	37	38	38	39	40	40	45	415
Tibet	8	7	8	9	8	8	8	9	8	9	11	13	106
Xinjiang	26	28	31	30	35	37	38	39	36	38	44	44	426
Yunnan	22	23	25	25	29	30	29	30	30	29	32	28	332
Zhejiang	86	104	119	127	155	189	217	212	220	245	273	291	2,238
Chongqing	26	23	24	28	26	30	32	34	35	36	40	37	371
Total	1,269	1,330	1,476	1,549	1,853	2,156	2,355	2,334	2,354	2,533	2,742	2,773	24,724

Table 3: Characteristics of Payouts and Incentives

Table 3 reports summary statistics (number of observations, mean, median, and standard deviation) for the payout and incentive variables used in our estimations. Panel A reports them for the entire dataset. Panel B reports them for the subsample of observations with non-zero incentives.

Panel A: Characteristics of payouts and incentives for whole dataset

	obs	mean	median	Std.dev
Cash Dividend to Assets	24,724	1.062%	0.422%	1.592
Payout ratio	24,724	1.0%	0.7%	0.010
Stock Dividend(Repurchase and Reserve Transfer) to Assets	24,724	0.342%	0.000%	1.070
Equity Incentives	24,724	13.1%	0.000%	0.337

Panel B: Characteristics of payouts and incentives for equity incentives subsample

	obs	mean	median	Std.dev
Cash Dividend to Assets	3,241	1.265%	0.723%	1.687
Payout ratio	3,241	0.9%	0.6%	0.009
Stock Dividend(Repurchase and Reserve Transfer) to Assets	3,241	0.598%	0.000%	1.449
Stock options	3,241	41.9%	0.000	0.494

Table 4: Analysis of Firm Characteristics

Table 4 provides summary statistics (mean, median and standard deviation) for firm characteristics, Panel A reporting them for the full dataset, and Panel B for the equity incentives subsample.

Panel A: Full dataset

	obs	mean	median	Std.dev
Cash Ratio	24,724	18.9%	14.7%	0.144
Log Assets	24,724	21.897	21.743	1.292
Debt Ratio	24,724	45.3%	44.8%	0.232
Tobin's Q	24,724	2.567	1.821	2.483
ROA	24,724	3.7%	3.6%	0.580
SD Return	24,724	14.5%	12.8%	0.074
Inst % Owned	24,724	33.5%	31.6%	0.243
Age	24,724	10.28	10.00	6.41
Retained earning	24,724	0.11	0.28	0.14

Panel B: Equity incentives subsample

	obs	mean	median	Std.dev
Cash Ratio	3,241	20.0%	16.0%	0.134
Log assets	3,241	22.097	21.952	1.150
Debt ratio	3,241	39.0%	38.1%	0.192
Q	3,241	3.145	2.420	2.551
ROA	3,241	5.4%	5.0%	0.049
SD Return	3,241	14.1%	12.4%	0.077
Inst % Owned	3,241	32.1%	28.4%	0.248
Age	3,241	8.053	7.000	5.511

Retained earning	3,241	0.197	0.185	0.116
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Figure 1: Regional IPI Distribution (2006-2017)



Figure1: Regional IPI Distribution

Figure 2: Equity Incentives Subsample: Proportion of Firms using Stock Options and Restricted Stock (2006-2017)

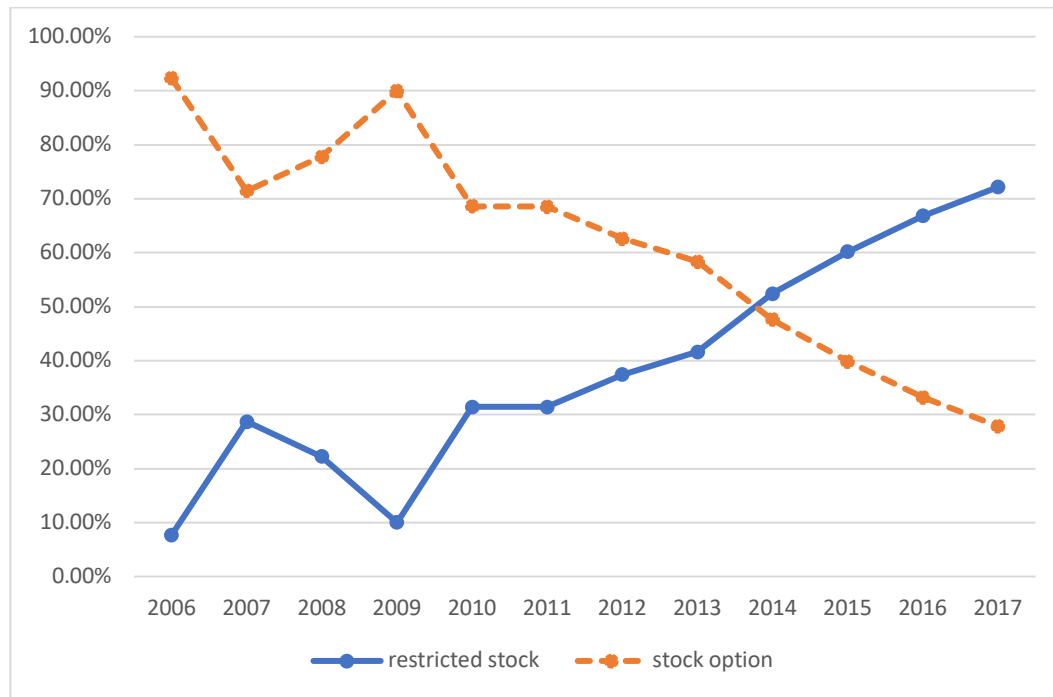


Table 5: Analysis of Cash and Stock Dividend Payouts

Table 5 reports coefficients from OLS regressions in which the dependent variables were the ratios of cash or stock dividends to total assets. We used robust standard errors clustered by firm, and included fixed effects for region, industry and year. IPI measures province-level investor protection, based on scores for “market intermediaries and legal system/environment”. All other variables are as defined in Table 1.

	Cash dividend			Stock dividend		
	(1)	(2)	(3)	(4)	(5)	(6)
Incentive	0.083*** (2.77)	0.264*** (3.39)	0.074 (1.02)	0.061** (2.31)	0.169** (2.39)	0.186*** (2.93)
Incentive*IPI		-0.024*** (-3.37)	-0.016** (-2.36)		-0.017*** (-2.58)	-0.013** (-2.16)
IPI		0.003 (0.57)	-0.005 (-0.76)		-0.003 (-0.55)	0.002 (0.32)
Log Assets	-0.065*** (-5.06)	-0.051*** (-2.75)	-0.064*** (-5.03)	-0.071*** (-6.20)	-0.042** (-2.49)	-0.071*** (-6.20)
Debt Ratio	-0.519*** (-7.97)	-0.527*** (-7.23)	-0.518*** (-7.96)	-0.176*** (-3.08)	-0.190*** (-2.88)	-0.176*** (-3.06)
ROA	7.397*** (43.15)	6.192*** (35.37)	7.400*** (43.17)	1.688*** (11.26)	1.426*** (8.99)	1.689*** (11.27)
SD Return	-0.604*** (-4.68)	-0.412*** (-3.04)	-0.601*** (-4.65)	1.244*** (11.02)	1.000*** (8.14)	1.244*** (11.01)

Cash Ratio	1.674*** (22.58)	1.738*** (21.75)	1.665*** (22.43)	1.107*** (17.01)	1.172*** (16.18)	1.103*** (16.92)
Inst% Owned	0.386*** (8.87)	0.102** (2.18)	0.384*** (8.83)	0.331*** (8.68)	0.470*** (11.07)	0.330*** (8.66)
Age	-0.060*** (-23.91)	-0.127*** (-25.71)	-0.060*** (-23.87)	-0.036*** (-15.82)	-0.027*** (-5.96)	-0.036*** (-15.81)
Retained earning	0.271*** (5.11)	0.195*** (3.20)	0.269*** (5.08)	0.085* (1.83)	0.024 (0.43)	0.084* (1.80)
constant	2.653*** (8.82)	2.710*** (6.99)	2.665*** (8.83)	1.640*** (6.10)	1.033*** (2.94)	1.627*** (6.03)
Firm FE	No	Yes	No	No	Yes	No
Region FE	Yes	No	Yes	Yes	No	Yes
Industry FE	Yes	No	Yes	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	24724	24724	24724	24724	24724	24724
R-squared	0.3283	0.2269	0.3284	0.1716	0.1483	0.1715

t statistics in parentheses; (***, **, and *) indicate 1, 5, and 10% significance levels, respectively

Table 6: Analysis of Dividends, Regional Investor Protection and Growth

Opportunities

Table 6 reports coefficients from OLS regressions in which the ratios of cash and stock dividends to total assets are the dependent variables. We use robust standard errors clustered by firm, and include region, industry and year fixed effects. Columns (1) and (2) use the “Low Q” subsample (Tobin’s Q below the average) based on year and province). Columns (3) and (4) use the “High Q” subsample (Tobin’s Q above average). IPI measures province-level investor protection based on scores for “market intermediaries and legal system/environment”. All other variables are as defined in Table 1.

Panel A: Cash dividend as dependent variable

	Low Q		High Q	
	(1)	(2)	(3)	(4)
Incentive	0.362*** (4.28)	0.180** (2.36)	-0.017 (-0.10)	-0.243* (-1.67)
Incentive*IPI	-0.027*** (-3.39)	-0.024*** (-3.38)	-0.001 (-0.06)	0.005 (0.35)
IPI	-0.001 (-0.21)	0.001 (0.15)	-0.001 (-0.04)	-0.000 (-0.03)
Log Assets	-0.057***	-0.063***	-0.042	0.055*

	(-2.83)	(-4.84)	(-0.85)	(1.94)
Debt Ratio	-0.846***	-0.756***	-0.241	-0.375***
	(-9.12)	(-9.74)	(-1.55)	(-3.01)
ROA	6.633***	7.464***	4.533***	7.395***
	(31.28)	(36.52)	(12.71)	(22.75)
SD Return	-0.268	-0.253	-0.495*	-0.984***
	(-1.59)	(-1.55)	(-1.88)	(-4.33)
Cash Ratio	1.466***	1.329***	1.571***	1.519***
	(14.55)	(15.19)	(9.98)	(11.43)
Inst % Owned	0.124**	0.391***	0.068	0.541***
	(2.55)	(8.78)	(0.58)	(5.71)
Age	-0.099***	-0.046***	-0.217***	-0.064***
	(-20.53)	(-18.31)	(-12.89)	(-14.33)
Retained earning	0.042	0.108	0.383***	0.319***
	(0.41)	(1.25)	(3.17)	(3.66)
constant	2.927***	2.410***	3.131***	-0.516
	(7.29)	(9.00)	(3.14)	(-0.85)
Firm FE	Yes	No	Yes	No
Region FE	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes
<i>N</i>	12362	12362	12362	12362
R-squared	0.2161	0.2930	0.1573	0.3156

Panel B: Stock dividend as dependent variable

	Low Q		High Q	
	(1)	(2)	(3)	(4)
Incentive	0.016	0.009	0.280***	0.279***
	(0.63)	(0.43)	(2.66)	(3.27)
Incentive*IPI	-0.003	-0.000	-0.022**	-0.014*
	(-1.16)	(-0.21)	(-2.31)	(-1.88)
IPI	0.001	0.000	-0.001	0.008**
	(0.54)	(0.26)	(-0.14)	(2.26)
Log Assets	-0.002	-0.005*	-0.072**	-0.115***
	(-0.33)	(-1.96)	(-2.53)	(-7.45)
Debt Ratio	-0.043	-0.029	-0.310***	-0.213***
	(-1.43)	(-1.39)	(-3.16)	(-2.81)
ROA	0.355***	0.375***	1.887***	2.342***
	(5.56)	(6.71)	(8.08)	(11.37)
SD Return	-0.005	-0.003	1.175***	1.555***
	(-0.11)	(-0.07)	(6.60)	(10.22)
Cash Ratio	0.163***	0.161***	1.336***	1.190***
	(4.84)	(6.42)	(13.01)	(14.24)
Inst % Owned	0.062***	0.020*	0.715***	0.451***

	(4.51)	(1.75)	(10.68)	(8.36)
Age	-0.003**	-0.004***	-0.041***	-0.046***
	(-2.19)	(-7.61)	(-4.98)	(-18.05)
Retained earning	-0.034	-0.044*	0.016	0.025
	(-1.00)	(-1.73)	(0.19)	(0.44)
constant	0.088	0.185***	1.620***	2.442***
	(0.77)	(3.21)	(2.81)	(7.48)
Firm FE	Yes	No	Yes	No
Region FE	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes
<i>N</i>	12362	12362	12362	12362
R-squared	0.0638	0.0748	0.1474	0.1600

t statistics in parentheses; (***, **, and *) indicate 1, 5, and 10% significance levels, respectively.

Table 7: Analysis of Stock Options and Restricted Stock

Table 7 reports coefficients from OLS regressions in which the ratios of cash and stock dividends to total assets are the dependent variables. We use robust standard errors clustered by firm, and include region, industry and year fixed effects. IPI measures province-level investor protection, based on scores for “market intermediaries and legal system/environment”. Stock options are captured with a dummy variable set to one for firms using stock option equity incentive schemes, and zero otherwise. All other variables are as defined in Table 1.

	Cash dividend			Stock dividend		
	(1)	(2)	(3)	(4)	(5)	(6)
Option	-0.119*	-0.729***	-0.435**	-0.061	-0.434	-0.222
	(-1.73)	(-2.76)	(-2.46)	(-0.94)	(-1.27)	(-1.32)
Option*IPI		0.054**	0.030*		0.025	0.015
		(2.37)	(1.92)		(0.86)	(1.02)
IPI		-0.020	-0.041		-0.054	-0.046

		(-0.54)	(-1.20)		(-1.12)	(-1.11)
Log Assets	0.027	0.091	0.031	-0.078**	-0.239**	-0.075*
	(0.64)	(1.02)	(0.72)	(-1.96)	(-2.07)	(-1.89)
Debt Ratio	-0.704***	-0.495	-0.709***	-0.583**	-1.296***	-0.585**
	(-3.09)	(-1.60)	(-3.11)	(-2.50)	(-3.26)	(-2.51)
ROA	10.829***	8.940***	10.800***	4.816***	4.064***	4.788***
	(14.33)	(9.86)	(14.29)	(5.71)	(3.48)	(5.67)
SD Return	-1.280***	-0.796*	-1.274***	2.500***	2.021***	2.518***
	(-3.18)	(-1.77)	(-3.16)	(5.28)	(3.49)	(5.32)
Cash Ratio	1.329***	1.275***	1.307***	1.396***	1.964***	1.378***
	(5.75)	(4.38)	(5.65)	(5.71)	(5.24)	(5.63)
Inst% Owned	0.412***	0.231	0.408***	0.374***	0.872***	0.372***
	(3.13)	(1.44)	(3.10)	(2.67)	(4.20)	(2.66)
Age	-0.023***	-0.077*	-0.024***	-0.036***	-0.052	-0.036***
	(-2.77)	(-1.65)	(-2.79)	(-5.00)	(-0.86)	(-5.02)
Retained earning	1.703***	1.774***	1.731***	-0.938**	-2.616***	-0.918**
	(4.49)	(2.95)	(4.56)	(-2.46)	(-3.38)	(-2.41)
constant	-1.173	-1.470	-0.923	1.969**	6.519**	2.231**
	(-1.07)	(-0.68)	(-0.83)	(2.03)	(2.34)	(2.25)
Firm FE	No	Yes	No	No	Yes	No
Region FE	Yes	No	Yes	Yes	No	Yes
Industry FE	Yes	No	Yes	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	3241	3241	3241	3241	3241	3241
R-squared	0.3805	0.3031	0.3814	0.1759	0.0922	0.1764

t statistics in parentheses; (***, **, and *) indicate 1, 5, and 10% significance levels, respectively

Table 8: Analysis of Joint Effects of Incentives and Regional Investor Protection on Corporate Performance

Table 8 reports coefficients from OLS regressions in which ROA and Tobin's Q ratio are the dependent variables. We use robust standard errors clustered by firm and include region, industry and year fixed effects. IPI measures province-level investor protection, based on scores for "market intermediaries and legal system/environment". All other variables are defined as in Table 1.

	ROA			Tobin's Q		
	(1)	(2)	(3)	(4)	(5)	(6)
Incentive	0.011***	0.029	0.005	0.470***	0.079	0.298***
	(9.96)	(0.47)	(0.12)	(11.60)	(0.79)	(3.09)

Incentive*IPI		0.011*	0.009*		0.020**	0.017*
		(1.96)	(1.80)		(2.14)	(1.87)
IPI		0.003	0.001		-0.003	0.023***
		(0.74)	(0.17)		(-0.47)	(2.77)
Log Assets	0.003***	0.048***	0.020***	-0.621***	-0.824***	-0.622***
	(6.83)	(3.28)	(3.44)	(-34.46)	(-34.20)	(-34.54)
Debt Ratio	-0.069***	-0.716***	-0.269***	-3.416***	-2.787***	-3.415***
	(-29.51)	(-12.79)	(-7.51)	(-39.69)	(-30.16)	(-39.69)
SD Return	0.034***	0.169	0.129	6.414***	6.160***	6.400***
	(6.79)	(1.60)	(1.43)	(37.66)	(35.23)	(37.57)
Cash Ratio	0.053***	0.241***	0.181***	-0.049	-0.338***	-0.028
	(19.08)	(3.87)	(4.08)	(-0.50)	(-3.29)	(-0.29)
Inst% Owned	0.024***	0.044	0.050*	0.846***	1.161***	0.850***
	(14.49)	(1.20)	(1.88)	(14.65)	(19.26)	(14.73)
Age	-0.000**	-0.006	0.003**	0.032***	0.195***	0.032***
	(-2.27)	(-1.47)	(2.47)	(8.81)	(30.69)	(8.70)
Retained earning	0.070***	-0.171***	-0.050*	-2.860***	-2.820***	-2.860***
	(37.79)	(-3.67)	(-1.84)	(-40.79)	(-36.56)	(-40.79)
constant	-0.022**	-0.670**	-0.346***	16.063***	18.832***	15.984***
	(-2.24)	(-2.21)	(-2.58)	(37.54)	(37.61)	(37.25)
Firm FE	No	Yes	No	No	Yes	No
Region FE	Yes	No	Yes	Yes	No	Yes
Industry FE	Yes	No	Yes	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	24724	24724	24724	24724	24724	24724
R-squared	0.3308	0.0241	0.0690	0.4895	0.2367	0.4902

t statistics in parentheses; (***, **, and *) indicate 1, 5, and 10% significance levels, respectively

Appendix :

1. Robust test for table 5, use Payout ratio as the dependent variable

	Payout ratio		
	(1)	(2)	(3)
Incentive	0.227** (2.19)	0.209*** (4.25)	0.107** (2.47)
Incentive*IPI		-0.015*** (-3.27)	-0.013*** (-3.28)
IPI		-0.007* (-1.86)	-0.012*** (-2.90)
Log Assets	0.188*** (26.28)	0.108*** (9.18)	0.189*** (26.34)
Debt Ratio	-0.271*** (-6.98)	-0.247*** (-5.36)	-0.271*** (-6.98)
ROA	3.369*** (31.86)	2.850*** (25.73)	3.373*** (31.91)
SD Return	-1.118*** (-14.00)	-0.924*** (-10.77)	-1.111*** (-13.92)
Cash Ratio	0.543*** (12.11)	0.667*** (13.19)	0.532*** (11.87)
Inst% Owned	-0.048* (-1.81)	-0.252*** (-8.49)	-0.051* (-1.92)
Age	-0.013*** (-9.75)	-0.030*** (-9.64)	-0.013*** (-9.67)
Retained earning	0.013 (0.42)	0.058 (1.51)	0.012 (0.38)
constant	-3.011*** (-18.07)	-1.166*** (-4.76)	-2.965*** (-17.71)
Firm FE	No	Yes	No
Region FE	Yes	No	Yes
Industry FE	Yes	No	Yes
Year FE	Yes	Yes	Yes
N	24724	24724	24724
R-squared	0.2960	0.1673	0.2969

2. Robust test for table 6 panel A, use Payout ratio as the dependent variable

	Low Q		High Q	
	(1)	(2)	(3)	(4)
Incentive	0.250*** (3.48)	0.139** (2.26)	0.051 (0.94)	-0.012 (-0.27)
Incentive*IPI	-0.016** (-2.32)	-0.016*** (-2.78)	-0.005 (-1.12)	-0.003 (-0.79)
IPI	-0.008* (-1.79)	0.005* (1.82)	-0.003 (-0.60)	0.001 (0.62)
Log Assets	0.111*** (6.55)	0.184*** (19.08)	0.060*** (3.89)	0.118*** (13.53)
Debt Ratio	-0.250*** (-3.18)	-0.240*** (-3.95)	-0.081* (-1.69)	-0.131*** (-3.43)
ROA	4.611*** (25.60)	5.375*** (31.71)	0.937*** (8.48)	1.652*** (16.58)
SD Return	-1.261*** (-8.82)	-1.486*** (-10.88)	-0.391*** (-4.80)	-0.617*** (-8.85)
Cash Ratio	0.809*** (9.45)	0.625*** (9.00)	0.427*** (8.75)	0.346*** (8.50)
Inst % Owned	-0.226*** (-5.46)	0.001 (0.02)	-0.137*** (-3.79)	0.003 (0.09)
Age	-0.033*** (-7.95)	-0.017*** (-9.46)	-0.022*** (-4.18)	-0.011*** (-8.03)
Retained earning	0.308*** (3.58)	0.307*** (4.50)	0.093** (2.48)	0.072*** (2.72)
constant	-1.071*** (-3.14)	-2.964*** (-14.93)	-0.515* (-1.67)	-1.892*** (-10.22)
Firm FE	Yes	No	Yes	No
Region FE	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes
N	12362	12362	12362	12362
R-squared	0.2210	0.2969	0.1910	0.2804

3. Robust test for table7, use Payout ratio as the dependent variable

	Payout ratio		
	(1)	(2)	(3)
Option	-0.004 (-0.10)	-0.347** (-2.55)	-0.120 (-1.20)
Option*IPI		0.034*** (2.92)	0.011* (1.82)
IPI		-0.035* (-1.85)	-0.034* (-1.94)
Log Assets	0.299*** (11.52)	0.335*** (6.19)	0.302*** (11.62)
Debt Ratio	-0.293** (-2.21)	-0.284* (-1.65)	-0.294** (-2.23)
ROA	4.032*** (8.15)	3.187*** (5.52)	4.013*** (8.11)
SD Return	-0.842*** (-3.97)	-0.773*** (-3.34)	-0.833*** (-3.93)
Cash Ratio	0.234* (1.88)	0.295** (1.97)	0.219* (1.75)
Inst% Owned	-0.208*** (-2.93)	-0.301*** (-3.64)	-0.212*** (-2.99)
Age	0.009 (1.64)	0.031 (1.26)	0.009 (1.63)
Retained earning	0.953*** (4.01)	1.497*** (4.05)	0.974*** (4.09)
constant	-6.425*** (-9.37)	-7.108*** (-5.49)	-6.242*** (-9.04)
Firm FE	No	Yes	No
Region FE	Yes	No	Yes
Industry FE	Yes	No	Yes
Year FE	Yes	Yes	Yes
N	3241	3241	3241
R-squared	0.3210	0.2550	0.3210

Equity incentive schemes, investor protection and corporate performance: evidence from China

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