Dividends and underinvestment in China:
Did foreign investors export liquidity during the global financial crisis?

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Little attention has been given to the international flow of liquidity between regions with different levels of temporary financial constraints. Examining approximately 18,000 firm-years from China, we find that foreign controlling ownership of Chinese firms was associated with extraordinary increase in dividend payouts during the 2007–2009 global financial crisis (GFC), with concomitant underinvestment. This evidence is robust to a matched sample of domestically controlled firms selected using propensity-score matching; as well as to an alternative control sample of firms invested in by Qualified Foreign Institutional Investors (QFIIs). We interpret our results as not due to a general clientele effect, but suggesting foreign-controlling shareholders in China acted specifically to expropriate (export) liquidity through dividends. These findings reveal a principal-principal agency cost during the GFC.

JEL classification: G15; G35

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1. Introduction

Post the 1980s, many emerging-market countries liberalized their domestic stock markets to foreign capital. In China, foreign portfolio investors may access the domestic stock market through the Qualified Foreign Institutional Investor (QFII) program or by holding B-shares.[1] Chen et al. (2013) estimate foreign portfolio investors hold around 2.23% of shares of listed firms through these two channels. In comparison, Foreign Direct Investment (FDI) firms, classified in China as Foreign-Invested Enterprises (FIE), often have much higher levels of foreign ownership. Since 2001, FIEs are allowed to make initial public offerings (IPOs) and trade on the secondary Chinese stock market.

We examine the impact of foreign ownership on dividend payment and the investment efficiency of Chinese corporations during the global financial crisis (GFC). We conduct difference-in-differences (D-i-D) tests on a large sample of Chinese listed firms, finding that foreign-controlling ownership is associated with larger dividend payouts during the GFC. This result is particularly strong when using QFII-invested firms as a control sample, indicating a difference in firms influenced by foreign ownership compared with those guided by foreign shareholders. We also document that, as a consequence of dividend increases, firm investment decreased during the crisis period, which led to a significant underinvestment problem among foreign-controlled firms. We argue that these findings are consistent with dividend increases, acting as a vehicle for the expropriation of liquidity by foreign-controlling shareholders during the GFC.

We have several motivations for engaging in this investigation. First, we seek to offer new information specifically regarding the impact of foreign-controlling ownership on Chinese firms and the Chinese economy. Understanding the benefits and consequences of foreign ownership on Chinese firms is of considerable importance to Chinese policymakers and to investors in general. Second, while a number of recent papers (e.g. Antón and Polk, 2014; Jotikasthira, Lundblad, and Ramadorai, 2012) have highlighted the global transference of liquidity through stock-price contagion (in the sense that selling equity is a form of homemade liquidity), this study provides new information relevant to

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[1] Chinese firms issue multiple types of shares. A-shares and B-shares are tradable, and state shares and legal person shares are non-tradable. As of June 2016, there were 2,863 A-share listed firms and 101 B-share listed firms in China. Most B-share listed firms also issued A-shares. B-shares were originally reserved for foreign investors. From 2001, domestic investors could also trade B-shares. QFIIs were introduced in 2003 in China.

the agency role of dividends. Third, we hope to offer new information regarding a mechanism of liquidity transference during financial distress. We consider this study alongside other research (e.g., Brown, 2000; Pulvino, 1998; Shleifer and Vishny, 1992) that considers the comparative advantage of possessing liquidity in times of financial crisis.[2] Many of these papers have been focused on the comparative advantage of less debt during financial downturns (Shleifer and Vishny, 1992).

Consistent with the international evidence of Stiglitz (1999) and Bae, Chan, and Ng (2004) that foreign capital may expose these domestic markets to international risks, Chen et al. (2013) report that foreign institutional shareholdings of Chinese firms increase firm-level stock-return volatility. While this line of literature generally emphasizes volatility, the influence of international risks on dividend payout remains unclear. The influence of the recent global financial crisis (GFC) on corporate policy and shareholder value in international markets has attracted much scholarly attention. For instance, Rudolph and Schwetzler (2013) investigate how the 2008–2009 financial crises affected the value of international diversification by multinationals. Bliss, Cheng, and Denis (2015) document significant reduction in corporate payouts in the U.S. during the GFC. Like Shleifer and Vishny (1992), they also report that payout reductions are more likely in firms that are susceptible to the negative effect of an external financing shock—those with higher leverage, more value-adding growth options, and lower cash balances.

Although the financial crisis originated from the U.S., Pang and Siklos (2016) find that spillovers from the U.S. to China are significant and originate from both the real and financial sectors of the U.S. economy. In particular, Pang and Siklos (2016) suggest the monetary policy stance of the People's Bank of China was helpful in mitigating the impact of the 2008–09 GFC on China's financial and economic scenario. So far, little attention has been given to payout policy and investment decisions of foreign-controlled, emerging-market firms during the GFC. Particularly with regard to equity markets, Glick and Hutchison (2013) find the correlation of equity price changes between Chinese markets and those of other Asian countries increased substantially during the GFC and

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[2] For instance, Brown (2000) finds that equity real estate investment trusts (REITs) have an advantage over mortgage REITs in acquiring heavily discounted properties during real estate crashes. Similarly, Pulvino (1998) finds that less-indebted airlines are often able during economic downturns to purchase aircraft from more levered firms at "fire-sale" prices

remained high in post-crisis years. However, the correlation of U.S. market equity returns with those of Asian countries contrastingly decreased after the GFC. Consistently, due to China's dominant role in the global economy, a focus on China is particularly valuable for gaining understanding of how foreign ownership facilitates liquidity shifts across regions during times of economic stress.

Overall, foreign investors in emerging stock markets are known to invest in firms with stronger corporate governance (see Leuz, Lins, and Warnock (2010) for cross-country evidence; Tong and Yu (2012) for evidence from China; and Jeon, Lee, and Moffett (2011) for evidence from Korea). While dividend payout may be used as a monitoring device to reduce free cash flow and mitigate the principal-agent conflict (Easterbrook, 1984; Jensen, 1986), high dividends constrain investment, especially during the onset of external financial shocks (see Ramalingegowda, Wang, and Yu (2013); Bliss, Cheng, and Denis (2015) for reviews). Consistent with this negative view of dividends, or, more specifically, excess dividends, previous studies, such as Faccio, Lang, and Young (2001) on East Asian and Western European markets, and Huang, Shen, and Sun (2011) on Chinese markets, document evidence of dividend expropriation by firm-controlling shareholders. The role of dividend payout during times of financial crisis has received insufficient attention, especially in the context of emerging markets.

We consider this study alongside other studies (e.g., Brown, 2000; Pulvino, 1998; Shleifer and Vishny, 1992) that have examine the comparative advantage of possessing liquidity in times of financial crisis. For instance, during downturns, firms with liquidity can take advantage of fire sales, as some firms are forced to seek liquidity by selling assets at heavily discounted prices (Brown 2000; Coval and Stafford, 2007; Pulvino, 1998). Shleifer and Vishny (1992), in their seminal article, suggest that, during financial downturns, liquidity is a cost of leverage. Allen and Gale (1994) outline this as a process that occurs when a large proportion of firms need to partially liquidate assets when the market prices for these assets are discounted. This allows firms with either excess liquidity or spare debt capacity to purchase assets at discounted prices. These studies focus mainly on firms with differences in liquidity levels within the same stressed environment. What has received less attention is how firm-level liquidity might be transferred (exported and imported) across regions when a financial crisis originates in the Western world.

Other papers study the linkages of stock return movements (e.g. Antón and Polk, 2014; Bartram et al., 2015; Jotikasthira, Lundblad, and Ramadorai, 2012). These papers generally evidence that a liquidity shock in one region of the globe causes selling pressure on stocks in another area of the globe. Certainly, the selling of assets is a method, like increasing dividend payouts, of obtaining additional liquidity. However, unlike these contagion studies, our study focuses on firms controlled by foreign investors in China that undergo increased dividend payout leading to underinvestment. In our study, investors do not relinquish control by selling but rather exercise control by compelling increased payout and subsequent underinvestment. This has very different agency and political-economic implications.

Of further interest is the likely obfuscation of liquidity expropriation via dividend increases. Compared to asset selling that depresses stock prices, dividend increases are generally considered a positive sign by markets. This resulting positive signal can easily mask expropriation and concomitant underinvestment. We analyze how stressed home-country markets can influence foreign investors' liquidity expropriation through dividend policy in their outward FDI firms. No prior study has considered changes in dividend payout by foreign-controlled emerging market firms as a means of moving liquidity across the globe. In this paper, we suggest this is what occurred in China during the GFC.

Our conclusions are based on both quantitative and qualitative reasoning. It is well known that investors seek liquidity during crises by cutting dividends. Further, our empirical tests suggest that, in China during the GFC, higher levels of dividend payout uniquely occurred for foreign-controlled firms. Since liquidity was inversely impacted in the Western world by the GFC, a liquidity-based explanation for investment-harming dividend increases by foreign-controlled firms in China during the GFC is intuitively plausible. In any case, our empirical results showing extraordinary dividend increases by foreign-controlled Chinese firms during the GFC will be of great interest to researchers and practitioners interested in global financial stability, the role of China in the global financial system, and the agency theory of dividends.

The paper proceeds as follows: In Section 2 we discuss the theoretical background of the paper and develop our hypothesis. Section 3 describes the data and methodology used in this paper.

Section 4 provides empirical results including summary statistics, regression analysis and robustness checks for potential endogeneity concerns. Section 5 concludes the paper.

2. Theoretical background and hypothesis development

Miller and Modigliani (1961) propose that firm valuation is independent of dividend policy in a perfect market setting. They propose that, with personal taxation, investors will form clienteles with preferences for specific levels of dividends. Allen, Bernardo, and Welch (2000) develop a dividend-signaling model based on the clientele hypothesis, proposing that firms might be able to signal their quality by initiating, then regularly paying, dividends. They conclude that only high-quality firms are able to bear the tax-based burden of regular dividend payouts to attract better-informed investors. In contrast, lower-quality firms are unable to continue such a cosmetic exercise for any extended period. Therefore, established dividend-clientele hypotheses suggest that foreign investors in Chinese firms are relatively more likely to invest in high-dividend-paying firms.

However, unique changes in payout on the part of foreign-controlled firms in China during the GFC prompts further investigation. We document that foreign-controlled firms in China uniquely increased payouts during the GFC. This behavior differed not only from that of other Chinese firms during the GFC, but also from the behavior of foreign-controlled firms during normal times. This remarkable behavior suggests a need to look beyond clientele-based explanations.

Next, consistent with La Porta et al. (2000), agency-hypothesis proponents argue that paying high dividends provides a cost-effective substitute for shareholder monitoring, leading to increases in firm-value and reductions over-investment. Prior literature suggests that large shareholders play a vital role in firm-level corporate governance by monitoring firm activities. Such monitoring leads to less principal-agent costs (Shleifer and Vishny, 1986). Therefore, in emerging markets like China, foreign investors with a majority shareholding (in the form of FIEs) are more likely to apply global standards and practices by disbursing more cash through dividends, as a complement to the monitoring role of domestic firms.

In China, foreign ownership of firms is typically much lower than that of the largest domestic ownership, which in most cases is state ownership (Firth et al., 2012; Ma et al., 2016). Due to regulatory constraints, foreign investors can rarely become controlling parties in listed firms in China

(Chen et al., 2013). Therefore, large foreign investors tend to abandon their long-term investment strategy within the Chinese speculative investment environment shaped by local retail investors. There is a large and growing body of literature testing whether foreign investors have informational advantages over their domestic peers. On one hand, foreign investors have a significant global investment exposure based on their technical skills. This is supplemented with an improved skill set to evaluate potential target firms in the form of manpower and technology. Therefore, it can be argued that foreign investors have an advantage over domestic investors. On the other hand, however, foreign investors may also have an inferior information set due to geological, cultural, and political differences (Choe, Kho, and Stulz, 2005). As a result, dividend payouts are perceived as a positive signal Consequently, firms that regularly pay dividends become likely candidates for foreign investment (Jeon, Lee, and Moffett, 2011).

Based on the above discussion, it is highly likely that foreign investors prefer high-dividend-paying firms. Interestingly, approximately 75% of the total foreign ownership of domestic Chinese firms is held by entities based in North American (U.S. and Canada) and European markets (Chen et al., 2013). Literature highlights that there are both costs and benefits linked to cash retention. Cash reserve is commonly used as a buffer against shocks to cash flows and investment opportunities. Thus, firms in crisis-hit markets are more likely to hold greater cash balances to offset substantially increased external-financing costs (Faulkender and Wang, 2006) and cash-flow volatility (Opler et al., 1999). They also are more likely to have an investment opportunity set that concomitantly becomes more valuable. This leads to an increased dependency on internal resources for investments (Almeida, Campello, and Weisbach, 2011). The credit crisis of 2008–09 manifested such an external shock (Bliss, Cheng, and Denis, 2015).

Almeida, Campello, and Weisbach, 2011), among others, argue that the onset of the credit crisis in mid-2007 represents a negative shock to the supply of credit in the Western markets. The resulting squeeze in the supply of external capital for U.S. and European firms likely impacted the availability of funds for corporate investment (Duchin, Ozbas, and Sensoy, 2010). Recent studies also suggest there was a concomitant lack of synchronization between business cycle (Fidrmuc and Korhonen, 2010) and finished-product export-orientation (Aloui, Aïssa, and Nguyen, 2011) between

emerging economies and the U.S. and European markets during the 2008–09 financial-crisis period. This aligns with recent evidence from Pyun and An (2016) that, during the GFC, business cycle co-movements between the U.S. and the rest of the world were stronger when the level of capital-market integration between them was higher. Further, Ahmed, Coulibaly, and Zlate (2017) report that emerging market economies with stronger economic fundamentals are more vulnerable to international financial shocks in the recent decade. Thus, there is ample reason to consider that foreign investors expropriated funds in the form of higher dividend payout during GFC. This rationale also is substantiated in prior studies such as Faccio, Lang, and Young (2001) on East Asian and Western European markets, and Huang, Shen, and Sun (2011) on Chinese markets. Consequently, Chinese-listed firms designated as FIEs are likely to pay higher dividends during the GFC in order to facilitate investment and cash-flow stability of foreign investors. Therefore, our primary hypothesis is:

H1: Foreign-invested enterprises paid higher dividends during the period of global financial crisis than domestic firms and did not have relatively higher payouts at other times.

Firms with better growth prospects have a stronger incentive to pay lower (or even omit) dividends in order to avoid tapping into costly external financing resources (La Porta et al., 2000). Recent studies establish a significant constraining effect of dividend policy on firm-level investment, leading to underinvestment problems (Brav et al., 2005; Ramalingegowda, Wang, and Yu, 2013). Managers are extremely reluctant to cut dividends and view the objective to maintain the dividend level as a "nearly untouchable" (Lintner, 1956; Brav et al., 2005). Furthermore, if managers increase dividend payout, they are more likely to continue this new payout level into the long run. The primary rationale for this sudden increment is unavailability of significant profit-yielding projects for the firm (Brav et al., 2005). More importantly, managers indicate that they are willing to forgo some valuable investment opportunities in order to maintain dividend levels, as opposed to declining investments only when they are likely to increase dividends (Brav et al., 2005). Overall, recent literature suggests a strong positive correlation between dividend payout and underinvestment.

Furthermore, there was a well-documented shock to the cost and supply of the credit in Western markets during the GFC (Bliss, Cheng, and Denis, 2015). Due to financial shock, firms faced significant decline in borrowing opportunities and increased uncertainty. This increased the cost of

external funds for the firms across the U.S. and Europe. Further, consistent with this abrupt change in the supply of credit, and successive rise in the cost of external funding, firms shifted planning direction toward increased credit rationing to accommodate higher costs of borrowing and difficulties in initiating or renewing credit lines (Campello, Graham, and Harvey, 2010). Consequently, foreign investors from crisis regions had particular motivation to reduce higher dividend payouts from Chinese firms in order to assuage shortages of liquidity or use as a buffer against anticipated shortages in their home markets during the GFC. Therefore, we hypothesize that the firms with substantial FIE holdings, being forced to increase their dividend payouts during the GFC, concomitantly suffered near-term underinvestment.

H2 Dividend increases for foreign-invested firms during the GFC were negatively associated with future firm-level investments and positively associated with underinvestment.

3. Data and model description

3.1 Sample selection

With the rapid integration of the Chinese financial markets in the global economy, especially in terms of FDI (Huang, Jin, and Qian, 2013), in 1990s and early 2000s, the Chinese stock market still remained effectively isolated to an extent that the foreign portfolio investors were legally prohibited from investing in domestic tradable A-shares until 2003, when China allowed QFIIs to invest in the domestic A-share market. This market ran under a government-allocated quota system, and was restricted to relatively large financial institutions in the initial phase (Huang and Zhu, 2015). Public listings of FDI firms classified as FIEs was prohibited by The Ministry of Foreign Trade and Economic Cooperation in China until 2001. Effectively, foreign ownership of listed firms in China remained insignificant until around 2005. For these reasons, we begin our sample period in 2005. We study a sample of up to 2,423 industrial firms listed on the Shanghai Stock Exchanges and Shenzhen Stock Exchanges in China from 2005[3] to 2014.

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[3] Besides, at the end of 2004, non-tradable shares in China accounted for more than 60% of the outstanding stocks, which seriously restricted the overall liquidity of the stock market. In 2005, the Chinese government initiated split-share structure resolution to resolve the issue of non-tradable shares to further improve the liquidity of the Chinese stock market; thus, our sample does not include the period prior to reform.

Our data is collected from the China Stock Market and Accounting Research (CSMAR) database (Firth et al., 2012; Firth et al., 2016). Following payout literature (Fama and French, 2001; Brockman and Unlu, 2009) we remove regulated utilities, financial firms and firms with negative book value. We also delete firms in financial distress[4] to ensure consistent comparison, since they are unlikely to pay any dividends or attract significant foreign investment. We also exclude firms with missing data and dual listings of H-shares due to different regulations. Further, we exclude firm-year observations for newly listed IPO firms (less than one year). Our final sample is an unbalanced panel that consists of up to 18,423 firm-year observations.

Over 60% of Chinese listed firms are in the manufacturing sector. The China Securities Regulatory Commission (CSRC) classifies all listed firms in 19 Tier-1 industries (using alphabetical codes A to S). "Manufacturing" is one of these classifications. As firms within "manufacturing" industries specialize in various sub-industries, using Tier-1 classifications is unlikely to be sufficient to capture industry effects. We therefore use Tier-2 industry classifications by CSRC (using numerical codes) to divide "manufacturing" into "manufacturing sub-industries." In total, excluding finance and utility sectors, we include 44 industries in our analysis.[5]

Since Lintner (1956), the literature on dividend policy has recognized that managers focus on DPS and dividend amount, rather than dividend payout ratios. Managers do this because dividends are sticky, and they are reluctant to upset investors by significantly changing the payout amount from year to year (Brav et al., 2005). Following recent literature on dividend payout (Ramalingegowda, Wang, and Yu, 2013; Bliss, Cheng, and Denis, 2015), we focus on cash dividend per share (DPS) and cash disbursed as dividends to shareholders as key payout parameters.[6]

3.2 Methodology and model description

To test H1, we adopt a difference-in-differences (D-i-D) model as follows:

$$\text{DPS}_{it} \text{ or } \text{Ln\_DIV}_{it} \text{ or } \text{DIV\_TA}_{it} = \alpha + \beta_1 \text{FIE}_i \times \text{Crisis}_t + \beta_2 \text{FIE}_i \times \text{Postcrisis}_t + \beta_3 \text{FIE}_i + \beta_4 \text{Crisis}_t +$$

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[4] Financially distressed firms are labelled as "ST" firms by Chinese stock exchanges.

[5] Please also note that other Tier-1 industries are not as large as manufacturing industry hence do not warrant further classifications. Goyal and Muckley (2013) study the payout policy across different industries in Asian countries including China and observe that average cash disbursement as dividend is stable across industries.

[6] Among all A-share non-financial firms, less than 7% firm-years have paid stock dividend during 2005–2014 among which only 24 firm-year observations are classified as FIEs.

$$\beta_5 Postcrisis_t + \gamma Controls_{it} + \varphi IND_i + \delta Year_t + \varepsilon_{it} \tag{1}$$

The dependent variable in EQ. (1) is the cash dividend per share (DPS_{it}) in Chinese yuan. As alternative measures of dividend payout policy, we compute the natural logarithm of cash disbursed as dividends during each financial year for dividend payers (Ln_DIV_{it}) and cash disbursed as dividend scaled by the value of total assets for all firm-years (DIV_TA_{it}). FIE_i is a dummy which is assigned "1" if the firm's controlling shareholder is a foreign investor (or firm) according to classifications of controlling shareholders types by CSMAR, and 0 otherwise.[7] $Crisis_t$ is a dummy which is assigned "1" for years 2007 to 2014, and "0" otherwise. $Postcrisis_t$ is a dummy assigned "1" for years 2010 to 2014, and "0" otherwise. $Controls_{it}$ represents a number of control variables. α is the intercept and ε_{it} is the regression error. Variables Ind_i and $Year_t$ control for industry fixed effects and year fixed effects.

EQ. (1) allows us to account for potential payout readjustments in the years following the 2007–2009 GFC when testing the marginal effect of foreign controlling shareholders on dividend policy (H1). This can be computed as $(\beta_1 Crisis_t + \beta_2 Postcrisis_t + \beta_3) * FIE_i$. When $Crisis_t$ and $Postcrisis_t$ both are equal to 0 (years 2005 and 2006), β_3 shows dividend payout by FIEs in excess of Non-FIEs in 2005–2006 prior to the financial crisis. When $Crisis_t = 1$ and $Postcrisis_t = 0$ (years 2007-2009), $\beta_1 + \beta_3$ shows dividend payout by FIEs in excess of Non-FIEs in 2007-2009 and β_1 represents the treatment effect of $Crisis_t$ on FIEs during the 2007–2009 financial crisis compared to the 2005-2006 pre-crisis period which tests hypothesis H1. When $Crisis_t = 1$ and $Postcrisis_t = 1$ (years 2010–2014), $\beta_1 + \beta_2 + \beta_3$ shows dividend payout by FIEs in excess of Non-FIEs in 2010–2014 and β_2 represents the treatment effect (dividend readjustments) of $Postcrisis_t$ on FIEs during 2010–2014 post-crisis period compared to the 2007–2009 crisis period.[8]

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[7] CSMAR identifies the controlling shareholder using CSRC's definition of the "ultimate owner" of a publicly listed company as: (1) the largest shareholder, or (2) the shareholder with more voting power than the largest shareholder, or (3) the shareholder with shareholding or voting rights above 30% of the total outstanding shares, or voting rights in the company, or (4) the shareholder who can determine over half of the board members.

[8] If "Crisis" is assigned "1" for 2007–2009 "0"otherwise; while "Postcrisis" is assigned "1" for 2010–2014 and "0" otherwise, we cannot compare readjustments between 2010–2014 and 2007–2009. What can be tested is payout differences between FIEs and non-FIEs in the post-crisis period 2010–2014. However, this is not a treatment effect. Further, as both "Crisis" and "Postcrisis" are time dummies, multicollinearity between these two variables is likely less of a concern that it would be for firm-level determinants. Additionally, the more likely consequence of such multicollinearity would be a reduction of T-statistics, resulting in less significance

Following extant payout literature on determinants of dividend policy in China, we include a number of control variables in our empirical analysis to test the validity and robustness of our key hypothesis (Huang, Shen, and Sun (2011). We control for firm-level profitability by including return on assets as earnings before interest and tax scaled by total assets. We control for cash liquidity by including free cash flow of firm scaled by total assets. We control for other cash flow with sales and operations scaled by total assets, size by including natural logarithm of the market capitalization, leverage by scaling book value of total liabilities by total assets and investment opportunities by Tobin's Q. Further, we include a dummy variable equal to 1 if the firm had a seasoned equity offering (SEO) or rights issue in the year before (*t-1*) or after (*t+1*) the year of observation (*t*) to account for capital market financing. To address the agency conflict between minority and majority shareholder, we control for the shareholding of the largest shareholder in the firm. Next, we consider the firm-level liquidity in the capital market by controlling for the proportion of tradable shares at the firm level. We also account for state-owned enterprises (i.e., SOEs) by including a firm-year-level dummy variable.

In order to examine the effects of dividend changes on firm investment, we follow Chen, Sun, et al. (2011) on capital investment of Chinese firms and measured capital investment INV as cash payments for fixed assets, intangible assets and other long-term assets from the cash flow statement minus cash receipts from selling these assets, scaled by one-year lag total assets.[9] We then follow Biddle, Hilary, and Verdi (2009) and Chen, Hope, et al. (2011) to estimate a measure of underinvestment,[10] denoted as follows:

$$\text{UNINV} = \text{Expected (INV)} - \text{INV} \tag{2}$$

where Expected (INV) is the expected investment calculated by employing a piecewise linear regression model:

$$\text{INV}_{it} = \alpha_0 + \alpha_1 \text{NEG}_{it-1} + \alpha_2 \text{RevGrowth}_{it-1} + \alpha_3 \text{NEG}_{it-1} * \text{RevGrowth}_{it-1} + \alpha_4 \text{IND}_i + \varepsilon_{it} \tag{3}$$

In EQ. (3) above, the dependent variable is firm-level investment scaled by total assets. The

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(Type II error) (Kumar, 1975; Greene, 2012). Nevertheless, in order to confirm our results, and to address likely concerns of readers, we also conduct tests using non-overlapping periods.

[9] Using changes of fixed assets as the capital investment measure does not change our findings.

[10] Expected investment is calculated based on sales growth which is certainly expected to be lower during the crisis. While this suggests that firms are likely to make lower investments, it does not mean they should make inefficient investment decisions. According to Biddle, Hilary, and Verdi (2009) and Chen, Hope, et al. (2011), underinvestment (overinvestment) means forgoing (accepting) positive (negative) NPV projects.

independent variable NEG_{it-1} is a dummy variable, equal to 1 if the change in sales over two consecutive fiscal years is negative. $RevGrowth_{it-1}$ is the change in sales over two consecutive fiscal years. We also control for industry fixed effects IND_i based on the CSRC 44-industry classification in the regression.

$$F\_INV_{it} \text{ or } F\_UNINV_{it} = \alpha + \beta_1 D\_DPS_{it} + \beta_2 D\_DPS_{it} \times Crisis_t + \beta_3 D\_DPS_{it} \times Crisis_t \times FIE_i +$$

$$\beta_4 Crisis_t + \beta_5 FIE_i + \gamma Controls_{it-1} + \varphi IND_i + \delta Year_t + \varepsilon_{it} \tag{4}$$

The dependent variable in the model is the one-year forward capital investment (F_INV_{it}) or underinvestment (F_UNINV_{it}) scaled by total assets. The independent variable D_DPS_{it} is the change of dividend per share (DPS) compared to previous year. To ensure robustness of the findings, we also replace D_DPS_{it} in the model with the change of total cash dispersed as dividend scaled by total assets ($D\_DIV\_TA_{it}$). As we aim to test the influence of dividend changes by foreign-controlled firms on firm investment during the 2007-2009 financial crisis period, the dummy variable $Crisis_t$ in EQ. (4) takes the value of 1 for years 2007–2009 and 0 for all other years. In light of Biddle, Hilary, and Verdi (2009), Chen, Hope, et al. (2011), and Chen, Sun, et al. (2011), we control for firm investment opportunity using Tobin's Q ratio and the percentage of tangible assets, profitability using return on assets, government control, board composition using the size of the board and board independence ratio, firm size, financial leverage and industry and year fixed effects in EQ. (4).

To account for outliers, we winsorize all non-dummy variables with a zero lower bound at the upper 1% level, while remaining variables are winsorized at the upper and lower 1% levels. A detailed description of all the dependent, explanatory and control variable is included in Appendix A1.

4. Empirical analysis and discussion of results

4.1 Summary statistics

Table 1 reports descriptive statistics for the variables used in this study. Panel A in particular shows the summary statistics for all the Chinese firm-years used in this study. We note that 4.3% of the firm-years are classified as FIEs under foreign control,[11] and slightly over 50% of the firms are classified as SOEs controlled by the Chinese government. The average dividend per share (payout

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[11] The average percentage shareholding by foreign controlling shareholders among FIEs is 37%, and these FIEs are mostly private sector firms in which the Chinese government owns zero or negligible number of shares.

amount annually disbursed by payers) is Chinese Yuan ¥ 0.103, and the average total cash dividend paid accounts for 1.2% of asset value among all firm-years. On average, 36.5% of the outstanding shares in Chinese firms are held by the largest shareholder, while another 31.4% are held by institutional investors.[12] Parameters for FIEs are reported in panel B of Table 1. They are not significantly different from the full sample used in this study; although payout across all three proxies (dividend per share, dividend amount, and scaled divided by total assets) is higher for the FIE firms. On average, FIE firms are bigger, more profitable, and have lower debt level with higher investment opportunities and cash-flow level.

(Please insert Table 1 about here)

The correlation matrix of these variables is reported in Appendix A2. As can be seen, all correlation coefficients between the dependent and key explanatory variables are less than 0.50, which suggests that multicollinearity is not a serious problem in this sample. Furthermore, the FIE dummy is positively related to all the three dividend proxies as well as underinvestment. It is also negatively related to investment during the financial crisis years, providing some preliminary evidence in support of our two hypotheses.

4.2 Dividend premiums, foreign controlled firms, and financial crisis

4.2.1   Baseline regression analysis

Table 2 shows our baseline regression tests for Hypothesis H1, which posit a positive treatment effect of foreign controlling ownership (FIE) on dividend payout during the period of GFC. As indicated in the model description section, the coefficient on the interaction FIE*Crisis captures the primary treatment effect. Models 1–8 show a consistent significant positive treatment effect in line with H1. These results are generally robust to alternative dividend payout measures and model estimation methods.[13]

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[12] In China, mutual funds are the most influential type of institutional investors (Firth et al., 2016). Other institutional investors include brokers, QFIIs, insurance companies, trusts, financial firms, banks, ordinary (non-government) legal persons and non-financial listed companies. Excluding ordinary legal persons in our tests does not alter our findings.

[13] An exception is Model 3 where the coefficient on the FIE*Crisis interaction is positive, but statistically insignificant.

In sum, our empirical estimates are consistent with our expectation that foreign-controlled firms paid higher dividends during the period of the GFC. In addition to this treatment effect, Models 2, 4 and 8 indicate a significant dividend readjustment (DPS or Ln_DIV cuts) by FIEs following the GFC. However, the re-adjustment results are inconsistent with those reported by Brav et al. (2005) for the U.S., in which the firms reduce their once-increased dividends only when their earnings deteriorate on a long-term basis. Thus we posit that these foreign-controlled Chinese firms increased their dividends initially to reduce their cash-flow vulnerability in their home country during the crisis period, and then subsequently reverted to optimal payouts post the GFC (Huang, Shen, and Sun, 2011).

In addition to these interactions, insignificant coefficients on the FIE dummy in fully parameterized regression models (Models 2, 4, 6, and 8) suggest that, in general, payout by FIEs was similar to that of domestically controlled firms prior to the GFC. This is contradictory to the well-established notion of higher dividend payout by foreign controlled firms in South Korea (Jeon, Lee, and Moffett, 2011). However, the dummy variable controlling for the crisis years is negative and significant in the fully parameterized Models 2, 4, 6 and 8. This suggests dividend cuts by domestically controlled firms, as opposed to increases, during the crisis. This is consistent with the findings of Bliss, Cheng, and Denis (2015) for the U.S. market, who suggest firms cut dividends during economic downturns as a precautionary tactic to reduce cash-flow variability and retain resources for future investments. The results for the dividend payout in the post-crisis period (2010–2014) are mixed, suggesting payout in this period was driven by the individual firm-level investment opportunity set. We leave this question to further research.

In terms of economic significance, the coefficient on FIE*Crisis in Model 2 of Table 2 is 0.047. This implies that the increase of DPS among FIEs during the GFC is 31.3% (26.1%) of the standard deviation of DPS for our sample (FIEs sample). Similarly, in Model 6 of Table 2, the coefficient on FIE*Crisis is 0.458, suggesting the increase of DIV_TA among FIEs during the GFC is 27% (or 20.4%) of the standard deviation of DIV_TA for our combined sample (FIE sample). Clearly, the economic impact is strong.

We also include Tobit models in our analysis of Table 2 as robustness tests. According to Tobin (1958), Amemiya (1973), and Greene (2012), OLS models are inconsistent when the dependent dividend variables are left or right bounded, resulting in downwards-biased slope coefficients and upward-biased intercept. In our case, decreases in payout are bounded to a reduction to zero. Therefore, we also include Tobit models. Tobit regressions are consistent with other results.

Regarding the other control variables, the coefficients on firm size and profitability (ROA) are positive and significant, indicating that large, profitable firms are more likely to pay dividends. The coefficients on investment opportunity, leverage, and capital raised through SEO are negative and significant. Overall, results for the firm-level controls hold to predictable relations with dividend payout proxies as documented in recent literature on payout in the Chinese setting (Huang, Shen, and Sun, 2011; Firth et al., 2016). Thus, it is clear that foreign-controlled firms in China are likely to pay higher dividends, both in terms of dollar amount and scaled payout, during periods of financial crisis (in their home country), but they also are likely to re-adjust their payout ratio once the crisis is over.

(Please insert Table 2 about here)

4.2.2   *The debt and payout pattern of foreign-controlled firms*

Theory of the agency cost of debt (Jensen, 1986; Fama and French, 2002) suggests that strong creditor monitoring can mitigate dividend expropriation by large shareholders and risk shifting from shareholders to creditors through firm dividend policy (Brockman and Unlu, 2009). In the initial years, post-liberalization, China's financial system was dominated by a large but underdeveloped banking system. This banking system was dominated by four large state-owned banks (Allen, Qian, and Qian, 2005). Although two new stock exchanges were established in China in the early 1990s, the scale and importance of these four banks remained dominant to other channels of financing, such as the capital markets and foreign banks (Qian and Yeung, 2015).

We conduct additional analysis, reported in Table 3, to account for the influence of creditors, mainly banks, on FIEs' dividend payout during the crisis years. To do this, we control for the industry/year median using adjusted excess financial leverage ratio (EX_LEV) (Liu and Tian, 2012). Consistent with theory (Fama and French, 2002), excess financial leverage is negatively associated

with dividend payout. As expected, the triple interaction term (FIE*Crisis*Ex_Lev) also is negative and significantly associated with dividend payout in all four models for the three proxies. We note that prior studies by Liu and Tian (2012) and Qian and Yeung (2015) illustrate that Chinese firms, especially those with political connections with state banks, often adopt higher leverage to facilitate intercorporate loan tunneling, which indicates weak bank monitoring of fund transfers by firm controlling shareholders. Our results here suggest that creditors, mostly banks, are wary of more obvious dividend expropriations by firm-controlling shareholders.

Finally, after controlling for excess leverage, the positive treatment effect on the interaction FIE*Crisis remains robust. Dividend readjustment (FIE*Postcrisis) is stronger than evidenced in Table 2 and robust to all three payout measures. This indicates that, for FIEs that exported liquidity through dividends, post-crisis downward dividend adjustment is significant after accounting for the monitoring role of creditors.

(Please insert Table 3 about here)

4.2.3   *Institutional investors and the payout pattern of foreign-controlled firms*

Analysis so far has focused on controlling ownership and minority shareholders holding tradable shares. Institutional investors may play a more influential role than individual investors given that individual ownership often is too diffuse to impact a firm's dividend policy. Additionally, since 2000, Chinese regulators have undertaken substantial efforts to develop financial institutions with the primary intention to improve the efficiency of the listed firms and help stabilize the stock market (Firth et al., 2016). Earlier studies on institutional investors in China generally indicate that they have preferential access to firm-level information (Yuan, Xiao, and Zou, 2008) and often engage in trading on insider information (Tong and Yu, 2012). Further, these institutional investors, through their voting rights, can not only influence firm-level financial decisions but also other major policy decisions through cash dividend payout (Firth, Lin, and Zou, 2010). It is not surprising, then, that institutional shareholding is negatively associated with Tobin's Q (Wei, Xie, and Zhang, 2005).

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In Table 4, we empirically conduct a robustness test by controlling for the percentage shareholding of institutional investors[14] on the foreign-controlled firm dividend payout during the period of financial crisis. In all four regressions, the triple interaction (FIE*Crisis*InsSh) is positive and significant, suggesting that institutional shareholding facilitates dividend expropriations by foreign-controlling shareholders during the financial crisis. In contrast, the FIE*Crisis interaction term becomes insignificant, indicating no dividend expropriations in FIEs during the crisis without institutional shareholdings.

Similar to the results reported in Table 3, the FIE*Postcrisis interaction term is negative and significant in all regressions. This result is consistent with downward payout readjustment after the crisis—especially after accounting for monitoring by institutional investors. These findings are consistent with Bushee (2001), who finds that an ownership base dominated by short-term-focused institutional investors can pressure managers into a short-term focus. Results also are consistent with the negative role of institutional investors in China documented by Tong and Yu (2012) and Wei, Xie, and Zhang (2005). Additionally, the findings reported in Table 4 are consistent with recent literature on dividend payout premiums exhibited by the institutional-investor-dominated firms (Firth et al., 2016).

(Please insert Table 4 about here)

The analyses reported in Tables 3 and 4 review our results examining the mitigating impact of creditors and institutional shareholders on the monitoring role controlling shareholders. Consistent with expectations, the results reported in these tables suggest creditor monitoring can constrain dividend expropriation by foreign-controlling shareholders in FIEs; whereas institutional investors tend to facilitate such activities. However, such moderating or exacerbating effects are not inconsistent with foreign-controlled firms particularly increasing payouts more than other firms during the years of the global financial crisis. Neither do these results suggest leverage or institutional shareholding are outcomes of principal-principal conflicts which are particular to foreign-controlled ownership.

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[14] Results are similar when excluding ordinary (non-government) legal persons from institutional investors.

4.2.4   Propensity-score matching and payout pattern of foreign controlled firms

A caveat in our analysis so far is the potential endogeneity of foreign control, which may lead to sample-selection bias. To address this concern, we follow Roberts and Whited (2013) and use PSM without replacement in conjunction with D-i-D estimation to conduct an additional robustness test of H1. A combination of PSM with a D-i-D estimator is likely to provide robust results as their properties are complementary (Blundell and Costa Dias, 2000). The first relaxes the common trend assumption of the latter, while the D-i-D estimator accounts for time-invariant unobservable firm heterogeneity which is neglected by PSM. We use PSM to identify among the domestically controlled (non-FIE) Chinese firms a subset of firms whose main characteristics are similar to those of the FIE firms. This procedure involves the estimation of an FIE firm's (propensity-score) ability to pay dividends over a set of firm-level characteristics. A non-FIE firm is then selected as a match to the FIE-firm on the following set of matching criteria: market capitalization, leverage, Tobin-Q, return on assets, industry of operation, and year of observation.

We apply propensity-score matching to identify comparable firms (Rosenbaum and Rubin, 1983). We also conduct nonparametric local linear regression matching to facilitate difference-in-differences tests (Heckman, Ichimura, and Todd, 1998; Guo and Fraser, 2010). Contrary to extant literature, which matches the firms that change their payout policy on risk factors (e.g., Grullon and Michaely, 2004; Grullon, Michaely, and Swaminathan, 2002), and following von Eije, Goyal, and Muckley (2014), we utilize a matching procedure for the selection of the counterfactual firms (i.e. Chinese firms not controlled by foreigners) that is based on publicly available information in the capital market. Our counterfactual firms, therefore, have a comparable, ex-ante propensity to increase their payout during the GFC as the FIE-controlled Chinese firms which actually increased their dividend payout between 2007 and 2009. For 774 FIE firm-years in our sample, we identify 774 unique matching non-FIEs.

We repeat our analysis of data in Tables 2–4 for the dividend payout premium by FIE-controlled Chinese firms during the GFC using this matching sample. Results are reported in Table 5. As expected, with matching, although the number of observations is reduced, our results are stronger and consistently support H1. All the relevant results that document the evidence of expropriation by

the FIEs are theoretically consistent and significant at 5% or higher level.[15] In summary, we witness the higher dividend payout by the FIE firms from 2007–2009 across Models 1, 2, 4 and 5. There is also a facilitation effect of institutional investors on dividend expropriations in FIEs during the financial crisis in Models 3 and 6. Likewise, we find the constraining effect of debt on dividend disbursement by FIEs during the financial crisis in Models 2 and 5. Finally, there is strong evidence of FIE firms readjusting their dividends once the crisis is over.

(Please insert Table 5 about here)

In order to address potential omitted variable problems and control for other corporate governance aspects which can potentially lead to higher dividends among FIEs during the GFC as well as control for other corporate aspects which can potentially lead to higher dividends among FIEs during the GFC, we follow research by Roberts and Whited (2013) and the analytical approach adopted by Hoechle et al. (2012). We run all the basic models specified in Tables 2–4 with more extensive firm-level governance proxies. These proxies include other receivables, related-party transactions, excess control rights of the controlling shareholders, and CEO duality.[16] In Models 1–6 of Appendix A3, we report our findings. As expected, among FIE-controlled Chinese firms, we still find strong evidence of expropriation through dividend premiums during the GFC, followed by swift readjustment of payout policy in the post-crisis period. This robustness test suggests that the FIE dummy captures aspects of the treatment firms that cannot be explained by the corporate governance control variables.[17]

4.2.5   Robustness tests using QFII-invested firms as a control sample

In this section, we offer empirical evidence that the liquidity expropriation effect dominates the clientele effect as an explanation for our results. This explanation relies on controlling-

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[15] We reranrerun Models 4–6 using Tobit regressions and find consistent results to the OLS regression reported in the table. Tobit regression results are not reported for brevity, but available from authors upon request.

[16] Jian and Wong (2010) and Jiang, Lee, and Yue (2010) suggest other receivables and related parties' transactions are good indicators of extra cash associated with earnings management and controlling shareholders tunneling.

[17] If dividend increases by FIEs during the crisis are due to FIEs having relatively better governance, then controlling for various aspects of governance should reduce the influence of FIE*Crisis. However, this is not the case (see Hoechle et al., 2012).

shareholders' influence over dividend payout during the crisis being different from that of foreign portfolio investors.

As noted above, in China, the percentage of foreign institutional shareholding is very low (around 2% among QFII-invested firms) and, thus, unlikely to exercise strong governance influence. Further, as others observe, foreign institutional investors (QFIIs) self-select into firms with better governance, characterized as being large, profitable, and dividend paying (Chen et al., 2013; Huang and Zhu, 2015). Consequently, high-dividend firms are likely to attract a QFII clientele.

During financial crises, however, foreign direct investment is far more difficult to reposition across borders compared to foreign portfolio investment. Therefore, during crises there is a strong motivation for foreign direct investors to exit through dividends (Vermeulen, 2013). Furthermore, foreign direct investment, due to its substantial nature, exercises strong influence over corporate policies; and so, such investors are particularly able to affect changes in payout. Consequently, it is appropriate that we classify FIEs in accordance with the type of controlling shareholder, in this case whether the investor is foreign.

A robustness test using QFII-invested (Non-FIE) firms as a control sample allows us to control for the clientele effect of foreigners and capture a less noisy liquidity expropriation (treatment) effect.[18] In Table 6, we report such tests. Across all models in Table 6, our results are highly consistent with results reported earlier and show strong support for Hypothesis H1 on dividend expropriation by foreign controlling shareholders during the GFC.

(Please insert Table 6 about here)

4.2.6   Robustness tests using non-overlapping crisis and post-crisis periods

To mitigate concerns regarding the use of overlapping periods in the above tests, we re-estimate all the models reported in Tables 2–5 for dividend payout premium by FIE-controlled Chinese firms during GFC using non-overlapping time period for "Crisis" and "Postcrisis" periods, and report them across Models 1–12 of Table 7. In this revised setting, "Crisis" is a dummy variable, equal to 1 for the years 2007–2009, otherwise 0. Similarly, "Postcrisis" is a dummy variable, equal to

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[18] The average percentage QFII shareholding among the control sample is 1.51%.

1 for the years 2010–2014, otherwise 0. As expected, in Table 7, across all models and dividend payout proxies, the coefficient on β_1 is positive and highly significant. This clearly indicates an increase in dividend payout by FIEs during the period of GFC. Interestingly, we fail to find any level of significance for the coefficient β_2 across all twelve models in this setting. This suggests that the dividend payout behavior of FIE-controlled Chinese firms reverted back to what it respectively was prior to the GFC. Simply put, dividend payout by foreign controlled firms in post-crisis period (2010–2014) is similar to the payout pattern in the pre-crisis period (2005–2006).

(Please insert Table 7 about here)

4.3 Change in payout pattern of foreign controlled firms and their investment policy

4.3.1   Basic regression analysis

The evidence on dividend expropriations by FIEs we document so far naturally leads to the question of how dividend changes affected FIEs' investment during the crisis years. Miller and Modigliani (1961) establish that, in a perfect capital market, investments are independent of dividend payout policy. However, markets were far from perfect during the GFC. In imperfect markets, dividend policy potentially affects investment decisions. Thus, dividend expropriations by foreign-controlling shareholders during the crisis might have resulted in economically significant underinvestment (H2).

Consequent empirical tests are reported in Table 8. With regard to testing our second hypothesis, the focus is how dividend increases by FIEs influence firm investment policy, rather than the impact of the level of dividend. Therefore, we exclude firm-years where there is no dividend change. The literature on dividends suggests investors and firms are reluctant to see dividend cuts (Lintner, 1956; Brav et al., 2005); hence, following Benartzi, Michaely, and Thaler (1997), we analyze dividend cuts and dividend increases separately.[19] The rationale behind splitting the sample is twofold. 1) There is extensive literature that documents asymmetric investor behavior towards

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[19] To address concerns about any potential issue of sample selection bias due to splitting the dataset into dividend increasing and dividend decreasing firms, we run an additional test using a pooled sample of firms that change their dividend policy over two consecutive financial years. Our results for the pooled sample are qualitatively and quantitatively similar to the results reported in Tables 8 and 9. While not reported in the tables, these results are available from the authors upon request.

dividend changes. Brav, Lehavy, and Michaely (2005) conduct in-depth interviews of financial executives, and argue that managers perceive a substantial asymmetry between dividend increases and decreases. 2) Many dividend theories imply that changes in dividends have information content about the future earnings of the firm trending in the same direction as the change in dividends (Benartzi, Michaely, and Thaler, 1997).

Panel A of Table 8 documents the regressions conducted using the subsample firm-years that increased DPS or, alternatively, total cash dispersed as dividend scaled by total assets compared to the previous fiscal year. We find that the triple interactions of change in payout in the crisis years by the foreign controlled firms (D_DPS*Crisis*FIE and D_DIV_TA*Crisis*FIE) are both negative and significantly associated with the one-period forward capital investment ratio (F_INV) in Models 1 and 3. Interestingly, the effect of dividend increase is much stronger with respect to one-period-ahead underinvestment ratio in models 2 and 4. Therefore, we conclude that dividend increase by foreign-controlled firms during crisis years had a detrimental effect on the firm-level investment policy and likely led to economically significant underinvestment. These results support H2.[20]

In Table 8, Panel B, we repeat our analysis using the subsample firm-years that cut dividend compared to the previous financial year. Expectedly, although almost half of firm-years did cut dividend according to the number of observations reported, dividend cuts by FIEs do not appear to be used to support investment or to mitigate underinvestment problems during the crisis years. Both D_DPS*Crisis*FIE and D_DIV_TA*Crisis*FIE are insignificant across Models 5–8 in Panel B.

(Please insert Table 8 about here)

In summary, the results from Table 8 support our hypothesis of the negative (positive) effect of dividend increases on the firm-level investments (underinvestment) during the period of global

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[20] The CSMAR database does not provide information on foreign controlling shareholders' business activities outside of China (for instance group headquarters located in the US). Therefore, we cannot empirically test the investment opportunity set of dividend-receiving firms. However, by employing the model of Biddle et al. (2009), we find strong evidence of underinvestment among FIE-controlled Chinese firms concomitant with substantially increased dividends during the GFC. Hence assuming that respective foreign investors have reasonably good investment opportunities (as suggested by Shleifer and Vishny, 1992) and others who note the added utility of liquidity during downturns), they are still pursuing them at the expense of Chinese dividend payers, effectively expropriating minority interests.

financial turmoil. In the next subsection, to further explore the robustness of the impact of dividend premium on firm-level investments, we create a control-sample of domestic-controlled firms using the PSM technique that minimizes the difference between our sample FIE firms and control firms on multiple dimensions.

4.3.2 *Change in payout pattern of foreign-controlled firms and their investment policy using propensity- score matching*

This subsection describes tests and results that establish the robustness of our second hypothesis. In particular, following the PSM technique detailed in Table 5 above, in Table 9 we address the endogeneity concern regarding the investment/underinvestment problem caused among foreign-controlled firms due to the effect of dividend change during the crisis years. As described above, we match FIEs and non-FIEs based on market capitalization, leverage, return on assets, Tobin-Q, asset tangibility, industry classification, and year of observation without replacement. Since we omit the firm-years for no dividend change for both the treatment and control sample, we eventually retrieve up to 171 (133) unique FIE and non-FIE firms that increase (decrease) their dividends over two consecutive fiscal years. This time, with matching FIE and non-FIE samples, although the number of observations is reduced, results in Panel A of Table 9 appear to offer stronger support for H2. We observe signs of underinvestment problems caused by an increase in dividend payout during crisis years among FIE-controlled firms. The results not only are theoretically consistent, but also are statistically significant at almost 1% level across models 1 to 4. Next, in Panel B, consistent with theory, we do not find any support in favor of investments if FIE firms cut their dividends during crisis years (D_DPS*Crisis*FIE and D_DIV_TA*Crisis*FIE). However, in general, dividend cuts support (resolve) investment (underinvestment) problems. Briefly put, our results strongly support the underinvestment problem among FIEs caused by a sudden increase in dividend payout during GFC.

(Please insert Table 9 about here)

4.4 *Impact of payout change on post-crisis revenue*

In the above sections, we establish the negative impact of dividend increment by FIE-controlled Chinese firms on their future investment policy. However, we still need to determine the

level of economic significance of this underinvestment by these firms. Therefore, we empirically investigate the detrimental impact of dividend increases on firms' revenue during the post-crisis period of 2010–2014. We begin by identifying a pool of FIE-controlled and non-FIE-controlled Chinese firms which, based on firm-level characteristics, had similar propensities to increase dividend payout during the GFC.[21] We subsequently add a dummy variable assigned "1" for all firm-years that increased their payout (identified as an increase in DPS) for 2007–2009 to the set of independent variables.

As shown in Models 1 and 3 of Table 10, FIE-controlled firms that increased their dividend payout during the period of financial crisis (DPS_inc_crisis * FIE) experienced subsequent declines in their post-crisis earnings (ROA) and sales growth. Interestingly, there also is a significant drop in their annual change in earnings (D_ROA) and sales growth. These results are robust to an array of annual firm-level financial and governance factors. These results are consistent with increases in dividend payouts during GFC causing subsequent underinvestment among FIEs as well as significant decline in revenue.[22]

(Please insert Table 10 about here)

4.5 Falsification tests

In light of Roberts and Whited (2013), falsification tests are designed to rule out alternative hypotheses and further examine the validity of the D-i-D models. We conduct D-i-D tests similar to those in tables 5 and 8 over fictional financial crisis years of 2010 to 2012.[23] In these tests reported in Appendix A4 and A5, post-financial crisis years are 2013–2014. In Models 1–6 of Appendix A4, we present our findings of no significant payout premium by the foreign-controlled firms during artificial crisis years (FIE*SY_2010-12). In Models 1–8 of Appendix A5, we do not observe any significant

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[21] Please refer to Section 4.2.4 for the detailed discussion on the PSM methodology used in this study.

[22] We also test the models in Table 10 with an increase in DIV_TA and Ln_DIV by FIE-controlled Chinese firms during GFC. Results are qualitatively and quantitatively similar, and available from the authors upon request.

[23] We cannot use any other period as fictional exogenous financial crisis, since 2005-2006 was a period of split-share structure reform in China (Huang and Zhu, 2015; Ma et al., 2016). We also require at least require two years of post-fictional crisis years for the proper interpretation of your D-i-D results. That leaves us with a period of 2010–2012 as the best candidate for fictional financial crisis years to test our hypothesis. Although we also run the tests for 2011–2012 periods as fictional financial crisis years, the results are comparable and qualitatively similar to the one reported in Table 9, and available from the authors upon request.

effect of dividend increases (decreases) exacerbating (solving) investment/underinvestment by FIE-run Chinese firms during the artificial shock period of 2010–2012. These falsification tests lend support to the inference of causality, which arises from the D-i-D tests reported in Tables 2–9.

In reviewing the pathway of our analysis, we form our conclusions through a series of steps. 1) We empirically determine that a change in the payout pattern of foreign-controlled firms in China occurred during the GFC and only during the GFC. FIEs increased payout during the years of the GFC and then returned to pre-crisis payout behavior post-crisis. 2) We note that other firms in China (i.e., those not foreign-controlled) did not increase payout or otherwise change payout behavior during the GFC. 3) We concomitantly observe that the GFC was a time and event predominantly characterized as a liquidity crisis and that this crisis was far more pronounced in North America and Europe than in China. And further, increases in payout act contra to the liquidity needs of firms. 4) We empirically determine that changes in payouts led to subsequent underinvestment of FIE firms, while such depreciation of value did not occur for other Chinese firms. Subsequently, we conclude that changes in payouts of FIEs were not done for a value-creating reason unique to FIEs. Related to this, in the sense of governance as value creating, we also control for cross-firm governance, finding that changes in payout were unrelated to differences in governance. The quantitative and qualitative processes used to form our conclusions are both reasonable and transparent. Overall, our results are strongly consistent with foreign-controlled firms in China increasing payout during the GFC in order to transfer liquidity from China to the West.

5. Conclusions

Examining approximately 18,000 firm/years from China for the period 2005–2014, this study finds that foreign-controlling ownership of Chinese firms was associated with extraordinary increases in dividend payouts during the global financial crisis. Using propensity-score matching, falsification tests and other procedures, we determine that such payout increases did not occur among domestically controlled firms or among firms with foreign portfolio investment during the GFC. We also find that these payout increases among foreign-controlled firms led to subsequent underinvestment.

Our results suggest that foreign-controlled shareholders in China acted specifically to expropriate (export) liquidity through dividends and that the effect was not due to general clientele

effect. While at a minimum, our analysis adds substantially to our knowledge on a very important topic, we are confident in our "theory of the case," that Western-controlled firms in China increased payout during the GFC to expropriate liquidity. Results reveal a principal-principal agency cost during the GFC. These findings should be of great interest to researchers and practitioners interested in global financial stability, the role of China in the global financial system, and the agency cost of equity in determining dividend payout during different financial cycles in emerging markets.

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Table 1: Descriptive statistics

This Table shows the basic summary statistics, from 2005–2014, for the 2,423 listed firms in Chinese stock market. We report the number of firm-year observations, average, standard deviation, minimum and maximum values of all the variables used in this study. Panel A reports the summary statistics for all the firms, Panel B reports the summary stats for only FIEs, i.e. foreign-controlled firms. Detailed definitions and descriptions of the variables are reported in Appendix A1

Variable	Unit	Panel A: All firms					Panel B: Foreign controlled firms (FIEs)				
		Obs.	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max
DPS	Yuan - ¥	18423	0.103	0.150	0.000	0.800	801	0.110	0.180	0.000	0.800
Ln_DIV	Nat. Log.	11629	17.535	1.371	14.692	21.530	455	17.598	1.361	14.692	21.530
DIV_TA	Ratio	18423	0.012	1.700	0.000	0.088	801	0.015	2.246	0.000	0.088
FIE	Dummy	18423	0.043	0.204	0.000	1.000	801	1.000	NA	1.000	1.000
SOE	Dummy	18423	0.523	0.499	0.000	1.000	801	0.000	NA	0.000	0.000
TradeSh	Ratio	18423	0.664	27.671	0.173	1.000	801	0.656	28.124	0.173	1.000
No1Sh	Ratio	18423	0.365	15.280	0.090	0.750	801	0.375	15.821	0.090	0.750
ROA	Ratio	18423	0.060	7.168	−0.241	0.279	801	0.061	8.628	−0.241	0.279
FCF	Ratio	18423	−0.028	15.928	−0.676	0.267	801	−0.026	16.354	−0.676	0.267
OCF	Ratio	18423	0.035	5.776	0.000	0.382	801	0.039	6.223	0.000	0.382
TobinQ	Ratio	18423	2.460	1.794	0.877	11.886	801	2.727	2.114	0.886	11.886
Ln_MV	Nat. Log.	18423	22.019	1.020	19.882	24.976	801	21.863	0.944	19.882	24.976
Lev	Ratio	18423	0.279	20.315	0.011	0.793	801	0.256	19.596	0.011	0.793
InsSh	Ratio	18423	0.314	24.346	0.000	0.864	801	0.315	26.004	0.000	0.864
Lag_SEO	Dummy	18423	0.065	0.246	0.000	1.000	801	0.046	0.210	0.000	1.000
Lead_SEO	Dummy	18423	0.140	0.347	0.000	1.000	801	0.116	0.321	0.000	1.000
INV	Ratio	16274	7.105	8.245	−5.021	46.985	708	6.913	8.805	−5.021	46.985
UNINV	Ratio	16266	0.013	7.758	−48.541	17.344	706	−0.286	7.901	−39.888	12.867
D_DPS	Yuan - ¥	15870	−0.009	0.098	−0.420	0.340	687	−0.004	0.099	−0.420	0.340
D_DIV_TA	Ratio	15870	0.050	1.112	−4.105	4.478	687	0.076	1.234	−4.105	4.478
Tang_Asset	Ratio	18423	0.441	22.871	0.061	0.923	801	0.441	23.895	0.061	0.923
Board_Size	Number	18290	9.011	1.843	3.000	19.000	795	8.535	1.645	3.000	15.000
Board_Ind	Ratio	18290	0.366	5.092	0.250	0.556	795	0.369	5.194	0.250	0.556

Table 2: Dividend payout policy of foreign controlled Chinese firms (FIEs) during crisis years.

The table reports the results for different regression techniques across various payout parameters for Chinese listed firms from 2005–2014. The dependent variable for Models 1 and 2 is dividend per share (DPS) using Tobit regression; for Models 3 and 4 is the natural logarithm of the dividend payout amount (Ln_DIV) for the actual amount paid as cash dividend using pooled OLS regression; for Models 5 and 6 is dividend scaled by total assets (DIV_TA) using pooled OLS regression; and for Models 7 and 8 is dividend scaled by total assets (DIV_TA) using Tobit regression. The numbers in the parenthesis are the robust t-statistics for the regression coefficient with firm-level clustered standard errors. To reduce endogeneity, all the continuous independent variables are lagged by one year. The definition of the variables is in Appendix A1. ***, **, * represent significance at the 1%, 5% and 10% level respectively.

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Method	Tobit	Tobit	OLS	OLS	OLS	OLS	Tobit	Tobit
Sample	All firms	All firms	Payers	Payers	All firms	All firms	All firms	All firms
Dep. Var.	DPS	DPS	Ln_DIV	Ln_DIV	DIV_TA	DIV_TA	DIV_TA	DIV_TA
FIE * Crisis	0.063**	0.047**	0.204	0.299**	0.639***	0.458**	0.925**	0.674**
	(2.01)	(2.02)	(0.90)	(2.25)	(2.76)	(2.55)	(2.36)	(2.39)
FIE * Postcrisis	–0.021	–0.038**	–0.371**	–0.168**	–0.018	–0.242*	-0.063	-0.383**
	(–0.93)	(–2.23)	(–2.48)	(–1.98)	(–0.09)	(–1.65)	(-0.22)	(-1.95)
FIE	–0.043*	–0.016	0.336*	–0.003	–0.310*	0.020	-0.639**	-0.166
	(–1.75)	(–0.87)	(1.79)	(–0.03)	(–1.88)	(0.15)	(-2.08)	(-0.74)
Crisis	0.091***	–0.023***	0.266***	–0.716***	0.392***	–0.930***	0.804***	-0.721***
	(10.26)	(–3.00)	(3.82)	(–16.39)	(5.65)	(–14.48)	(7.05)	(-7.57)
Postcrisis	0.049***	0.044***	0.079	–0.022	0.081	0.149***	0.428***	0.426***
	(7.06)	(7.63)	(1.46)	(–0.71)	(1.50)	(3.27)	(5.15)	(6.46)
TradeSh	–0.002***	–0.001***	-0.003***	–0.002***	–0.012***	–0.005***	-0.019***	-0.008***
	(–23.15)	(–14.60)	(-6.78)	(–7.65)	(–20.70)	(–9.65)	(-22.60)	(-10.78)
No1Sh	0.002***	0.001***	0.021***	0.002***	0.012***	0.005***	0.022***	0.009***
	(18.07)	(8.19)	(23.21)	(4.65)	(12.28)	(6.45)	(16.19)	(8.28)
SOE	–0.012***	–0.011***	0.534***	0.006	–0.249***	–0.109***	-0.317***	-0.117***
	(–3.21)	(–3.33)	(18.61)	(0.31)	(–8.66)	(–4.38)	(-7.16)	(-3.16)
ROA		0.017***		0.073***		0.081***		0.196***
		(45.70)		(37.37)		(37.25)		(46.92)
FCF		–0.000***		0.003***		0.002*		0.005***
		(–4.37)		(7.28)		(1.89)		(4.72)
OCF		–0.004***		–0.006***		–0.016***		-0.049***
		(–11.70)		(–3.21)		(–9.73)		(-13.18)
TobinQ		–0.035***		–0.268***		–0.008		-0.299***
		(–24.43)		(–34.02)		(–0.86)		(-18.12)
Ln_MV		0.053***		1.049***		0.317***		0.427***
		(28.85)		(108.32)		(22.75)		(21.54)
Lev		–0.001***		0.003***		–0.022***		-0.033***
		(–14.89)		(4.91)		(–31.96)		(-30.08)
Lag_SEO		–0.031***		–0.117***		–0.299***		-0.309***
		(–6.14)		(–4.21)		(–8.16)		(-5.78)
Lead_SEO		–0.030***		–0.123***		–0.264***		-0.320***
		(–7.89)		(–5.67)		(–9.11)		(-7.43)
Constant	–0.027***	–1.079***	15.932***	–5.278***	1.297***	–4.825***	0.184*	-7.753***
	(–3.01)	(–27.79)	(235.06)	(–26.16)	(18.73)	(–16.70)	(1.67)	(-18.63)
Industry effects	No	Yes	No	Yes	No	Yes	No	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,653	17,653	11,149	11,149	17,653	17,653	17,653	17,653
No. of Firms	2,423	2,423	2,209	2,209	2,423	2,423	2,423	2,423
R-squared			0.12	0.72	0.07	0.38		

Table 3: Dividend payout policy of foreign controlled Chinese firms (FIEs) during crisis years while controlling for excess leverage.

The table reports the results for different regression techniques across various payout parameters for Chinese listed firms from 2005–2014. The dependent variable for Model 1 is dividend per share (DPS) using Tobit regression; for Model 2 is the natural logarithm of the dividend payout amount (Ln_DIV) for the actual amount paid as cash dividend using pooled OLS regression; for Models 3 and 4 is dividend scaled by total assets (DIV_TA) using pooled OLS regression and Tobit regression respectively. The numbers in the parenthesis are the robust T-statistics for the regression coefficient with firm-level clustered standard errors. To reduce the endogeneity problem, all the continuous independent variables are lagged by one year. Excess leverage (Ex_Lev) is the industry-year median adjusted financial leverage ratio. Results on control variables are suppressed to conserve space. The definition of the variables is in Appendix A1. ***, **, * represent significance at the 1%, 5%, and 10% level respectively.

Model	(1)	(2)	(3)	(4)
Method	Tobit	OLS	OLS	Tobit
Sample	All firms	Payers	All firms	All firms
Dep. Var.	DPS	Ln_DIV	DIV_TA	DIV_TA
FIE * Crisis * Ex_Lev	–0.002***	–0.009***	–0.019***	-0.025***
	(–4.23)	(–3.13)	(–4.45)	(-4.22)
Ex_Lev	–0.001***	–0.002***	–0.021***	-0.032***
	(–13.13)	(–2.96)	(–28.62)	(-27.59)
FIE * Crisis	0.047**	0.296**	0.476***	0.645**
	(2.00)	(2.24)	(2.64)	(2.29)
FIE * Postcrisis	–0.043**	–0.190**	–0.308**	-0.447**
	(–2.51)	(–2.29)	(–2.08)	(-2.25)
Crisis	0.007	–0.770***	–0.449***	-0.003
	(0.90)	(–17.76)	(–7.19)	(-0.04)
Postcrisis	0.039***	–0.021	0.079*	0.320***
	(6.83)	(–0.67)	(1.73)	(4.85)
FIE	–0.015	–0.009	0.027	-0.143
	(–0.82)	(–0.08)	(0.20)	(-0.63)
Constant	–1.131***	–5.269***	–5.644***	-9.033***
	(–28.69)	(–25.67)	(–19.24)	(-21.16)
Firm-level controls	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	17,653	11,149	17,653	17,653
No. of Firms	2,423	2,209	2,423	2,423
R-squared		0.72	0.38	

Table 4: Dividend payout policy of foreign controlled Chinese firms (FIEs) during crisis years while controlling for institutional shareholding.

The table reports the results for different regression techniques across various payout parameters for Chinese listed firms from 2005–2014. The dependent variable for Model 1 is dividend per share (DPS) using Tobit regression; for Model 2 is the natural logarithm of the dividend payout amount (Ln_DIV) for the actual amount paid as cash dividend using pooled OLS regression; for Models 3 and 4 is dividend scaled by total assets (DIV_TA) using pooled OLS regression and Tobit regression respectively. The numbers in the parenthesis are the robust t-statistics for the regression coefficient with firm-level clustered standard errors. To reduce the endogeneity problem, all the continuous independent variables are lagged by one year. Institutional shareholding (InsSh) is the proportion of shares held by the institutional shareholders in the firm-year scaled by the total number of outstanding shares. Results on control variables are suppressed to conserve space. The definition of the variables is in Appendix A1. ***, **, * represent significance at the 1%, 5%, and 10% level respectively.

Model	(1)	(2)	(3)	(4)
Method	Tobit	OLS	OLS	Tobit
Sample	All firms	Payers	All firms	All firms
Dep. Var.	DPS	Ln_DIV	DIV_TA	DIV_TA
FIE * Crisis * InsSh	0.001***	0.003**	0.010***	0.010***
	(3.98)	(2.30)	(3.24)	(2.90)
InsSh	0.001***	0.001***	0.006***	0.009***
	(14.36)	(3.14)	(8.42)	(9.30)
FIE * Crisis	0.009	0.197	0.208	0.380
	(0.39)	(1.38)	(1.12)	(1.28)
FIE * Postcrisis	−0.054***	−0.194**	−0.394**	-0.518**
	(−3.16)	(−2.29)	(−2.51)	(-2.53)
Crisis	−0.017**	−0.719***	−0.898***	-0.675***
	(−2.22)	(−16.49)	(−14.08)	(-7.12)
Postcrisis	0.045***	−0.023	0.156***	0.436***
	(7.95)	(−0.74)	(3.44)	(6.66)
FIE	−0.016	−0.002	0.012	-0.171
	(−0.91)	(−0.02)	(0.10)	(-0.76)
Constant	−0.815***	−5.529***	−3.551***	-5.853***
	(−20.28)	(−25.29)	(−11.46)	(-13.29)
Firm-level controls	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	17,653	11,149	17,653	17,653
No. of Firms	2,423	2,209	2,423	2,423
R-squared		0.72	0.38	

Table 5: Robustness check of the dividend payout policy by foreign controlled Chinese firms (FIEs) during crisis years using propensity-score matching.

The table reports the results for different regression techniques across various payout parameters for Chinese listed firms from 2005–2014. The dependent variable for Models 1, 2 and 3 is dividend per share (DPS) using Tobit regression and for 4, 5 and 6 is dividend scaled by total assets (DIV_TA) using pooled OLS regression. The numbers in the parenthesis are the robust t-statistics for the regression coefficient with firm-level clustered standard errors. To reduce the endogeneity problem, all the continuous independent variables are lagged by one year. We use PSM technique to match FIE and non-FIE firms based on market capitalization, leverage, return on assets, Tobin-Q, industry of operation and year of observation. The definition of the variables is in Appendix A1. ***, **, * represent significance at the 1%, 5%, and 10% level respectively.

Model	(1)	(2)	(3)	(4)	(5)	(6)
Method	Tobit	Tobit	Tobit	OLS	OLS	OLS
Sample	All firms	All firms	All firms	All firms	All firms	All firms
Dep. Var.	DPS	DPS	DPS	DIV_TA	DIV_TA	DIV_TA
FIE * Crisis * Ex_Lev		–0.002***			–0.027***	
		(–2.93)			(–5.37)	
Ex_Lev		–0.002***			–0.014***	
		(–3.57)			(–4.66)	
FIE * Crisis * InsSh			0.001***			0.009**
			(2.62)			(2.31)
InsSh			0.001***			0.006*
			(3.32)			(1.68)
FIE * Crisis	0.081**	0.081**	0.037	0.512**	0.527**	0.305
	(1.97)	(1.97)	(0.90)	(2.22)	(2.26)	(1.27)
FIE * Postcrisis	–0.051*	–0.056**	–0.064**	–0.306*	–0.355*	–0.446**
	(–1.94)	(–2.13)	(–2.37)	(–1.65)	(–1.94)	(–2.33)
Crisis	–0.070*	–0.014	–0.045	–1.582***	–1.061***	–1.437***
	(–1.82)	(–0.37)	(–1.21)	(–6.15)	(–4.35)	(–5.57)
Postcrisis	0.067**	0.058**	0.071***	0.460**	0.378*	0.530***
	(2.42)	(2.05)	(2.58)	(2.23)	(1.85)	(2.59)
FIE	–0.036	–0.039	–0.034	–0.024	–0.080	–0.026
	(–1.02)	(–1.13)	(–0.99)	(–0.13)	(–0.41)	(–0.14)
TradeSh	–0.001***	–0.001***	–0.002***	–0.004**	–0.004**	–0.010***
	(–3.48)	(–3.67)	(–6.57)	(–2.05)	(–2.28)	(–4.08)
No1Sh	0.001**	0.001**	0.000	0.004	0.003	–0.000
	(2.11)	(1.98)	(0.10)	(1.31)	(0.95)	(–0.01)
SOE	0.001	–0.008	0.004	–0.120	–0.250**	–0.097
	(0.06)	(–0.50)	(0.24)	(–1.12)	(–2.30)	(–0.92)
ROA	0.019***	0.019***	0.019***	0.072***	0.073***	0.069***
	(12.16)	(12.08)	(11.70)	(10.59)	(10.73)	(10.36)
FCF	0.000	0.000	0.000	0.002	0.002	0.002
	(0.01)	(0.13)	(0.14)	(0.51)	(0.75)	(0.64)
OCF	–0.008***	–0.008***	–0.007***	–0.020***	–0.020***	–0.020***
	(–4.75)	(–4.85)	(–4.35)	(–3.48)	(–3.41)	(–3.46)
TobinQ	–0.042***	–0.041***	–0.043***	0.028	0.031	0.023
	(–7.39)	(–7.37)	(–7.78)	(0.90)	(1.03)	(0.78)
Ln_MV	0.094***	0.096***	0.074***	0.643***	0.672***	0.545***
	(9.64)	(9.93)	(7.83)	(10.13)	(10.62)	(8.16)
Lev	–0.003***		–0.003***	–0.025***		–0.025***
	(–6.66)		(–6.35)	(–9.62)		(–9.54)
Lag_SEO	–0.042	–0.043	–0.045*	–0.450***	–0.453***	–0.441***
	(–1.55)	(–1.58)	(–1.71)	(–2.94)	(–2.93)	(–2.94)
Lead_SEO	–0.025	–0.025	–0.027	–0.523***	–0.538***	–0.531***
	(–1.39)	(–1.42)	(–1.57)	(–4.56)	(–4.71)	(–4.63)
Constant	–1.943***	–2.093***	–1.460***	–11.820***	–13.232***	–9.434***
	(–9.62)	(–10.35)	(–7.29)	(–9.11)	(–10.16)	(–6.78)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,542	1,542	1,542	1,548	1,548	1,548
R-squared				0.46	0.47	0.47

Table 6: Robustness check of the dividend payout policy by foreign controlled Chinese firms (FIEs) during crisis years using QFII-invested firms as a control sample.

The table reports the results for different regression techniques across various payout parameters for Chinese listed firms from 2005–2014. The dependent variable for Models 1, 2 and 3 is dividend per share (DPS) using Tobit regression and for 4, 5 and 6 is dividend scaled by total assets (DIV_TA) using pooled OLS regression. The numbers in the parenthesis are the robust t-statistics for the regression coefficient with firm-level clustered standard errors. To reduce the endogeneity problem, all the continuous independent variables are lagged by one year. We use QFII-invested (Non-FIE) firms as a control sample to rerun the regressions. The average percentage QFII shareholding among the control sample is 1.51%. The definition of the variables is in Appendix A1. ***, **, * represent significance at the 1%, 5%, and 10% level respectively.

Model	(1)	(2)	(3)	(4)	(5)	(6)
Method	Tobit	Tobit	Tobit	OLS	OLS	OLS
Sample	All firms	All firms	All firms	All firms	All firms	All firms
Dep. Var.	DPS	DPS	DPS	DIV_TA	DIV_TA	DIV_TA
FIE * Crisis * Ex_Lev		–0.002***			–0.012**	
		(–4.27)			(–2.29)	
Ex_Lev		–0.001***			–0.027***	
		(–3.07)			(–9.74)	
FIE * Crisis * InsSh			0.001***			0.008**
			(2.75)			(2.30)
InsSh			0.001***			0.004
			(4.33)			(1.55)
FIE * Crisis	0.064**	0.045*	0.012	0.567**	0.602***	0.376
	(2.11)	(1.68)	(0.42)	(2.49)	(2.61)	(1.60)
FIE * Postcrisis	–0.036	–0.036*	–0.052**	–0.497***	–0.507***	–0.631***
	(–1.56)	(–1.78)	(–2.51)	(–2.83)	(–2.89)	(–3.44)
Crisis	–0.151***	–0.012	–0.024	–1.504***	–0.886***	–1.426***
	(–6.45)	(–0.57)	(–1.12)	(–6.80)	(–4.04)	(–6.41)
Postcrisis	0.067***	0.057***	0.068***	0.641***	0.541***	0.672***
	(3.49)	(3.35)	(3.98)	(4.12)	(3.48)	(4.29)
FIE	–0.064***	–0.030	–0.019	0.026	–0.030	0.012
	(–2.58)	(–1.35)	(–0.87)	(0.13)	(–0.15)	(0.06)
Constant	–2.028***	–1.314***	–0.994***	–6.767***	–7.943***	–5.608***
	(–15.73)	(–11.49)	(–8.81)	(–6.93)	(–7.94)	(–5.62)
Firm–level Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,261	2,261	2,261	2,261	2,261	2,261
R–squared				0.442	0.438	0.446

Table 7: Robustness test using non–overlapping pre–crisis/crisis/post–crisis periods.

This table reports regression results using non–overlapping pre–crisis/crisis/post–crisis periods. In this table, Crisis is a dummy which equals to 1 for years from 2007–2009, or otherwise 0 and Postcrisis is a dummy which equals to 1 for years 2010–2014, or otherwise 0. Model specifications follow those reported in Tables 2–5. The dependent variable for Models 1, 4, and 7 is dividend per share (DPS), for Models 2, 5, and 8 is the natural logarithm of the dividend payout amount (Ln_DIV) for the actual amount paid as cash dividend, for Models 3, 6 and 9–12 is dividend scaled by total assets (DIV_TA). The numbers in the parenthesis are the robust T-statistics for the regression coefficient with firm–level clustered standard errors. To reduce the endogeneity problem, all the continuous independent variables are lagged by one year. See Appendix A1 for variable definitions. ***, **, * represent significance at the 1%, 5%, and 10% level respectively.

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Method	Tobit	OLS	OLS	Tobit	OLS	OLS	Tobit	OLS	OLS	OLS	OLS	OLS
Sample	All firms	Payers	All firms	All firms	Payers	All firms	All firms	Payers	All firms	PSM–Matched	PSM–Matched	PSM–Matched
Dep. Var.	DPS	Ln_DIV	DIV_TA	DPS	Ln_DIV	DIV_TA	DPS	Ln_DIV	DIV_TA	DIV_TA	DIV_TA	DIV_TA
FIE * Crisis * Ex_Lev				–0.004***	–0.017***	–0.026***					–0.023**	
				(–2.91)	(–3.28)	(–2.64)					(–2.44)	
Ex_Lev				–0.001***	0.002***	–0.021***					–0.022***	
				(–13.59)	(2.73)	(–29.29)					(–8.07)	
FIE * Crisis * InsSh							0.002***	0.005**	0.018***			0.012**
							(3.08)	(2.03)	(3.13)			(2.19)
InsSh							0.001***	–0.001***	0.006***			0.009***
							(14.83)	(–2.99)	(8.74)			(3.16)
FIE * Crisis	0.047**	0.299**	0.457**	0.047**	0.286**	0.489***	–0.014	0.119	0.008	0.481**	0.511**	0.196
	(2.02)	(2.25)	(2.55)	(2.00)	(2.18)	(2.66)	(–0.51)	(0.71)	(0.04)	(2.06)	(2.13)	(0.75)
FIE * Postcrisis	0.010	0.132	0.215	0.009	0.133	0.202	0.008	0.135	0.213	0.191	0.184	0.200
	(0.48)	(1.10)	(1.38)	(0.42)	(1.11)	(1.29)	(0.40)	(1.12)	(1.37)	(0.89)	(0.85)	(0.94)
Crisis	–0.023***	–0.716***	–0.930***	0.047***	–0.788***	–0.365***	0.027***	–0.745***	–0.749***	–1.419***	–0.904***	–1.277***
	(–3.00)	(–16.39)	(–14.48)	(6.36)	(–18.72)	(–6.00)	(3.65)	(–17.37)	(–12.08)	(–5.16)	(–3.37)	(–4.61)
Postcrisis	0.021***	–0.738***	–0.781***	–0.015	–0.008	0.030	–0.017	–0.003	0.010	–0.051	–0.056	–0.071
	(2.76)	(–17.18)	(–12.53)	(–0.80)	(–0.07)	(0.23)	(–0.93)	(–0.03)	(0.08)	(–0.27)	(–0.28)	(–0.37)
FIE	–0.016	–0.003	0.020	0.008	–0.767***	–0.445***	–0.018**	–0.722***	–0.907***	–1.810***	–1.244***	–1.742***
	(–0.87)	(–0.03)	(0.15)	(0.97)	(–17.69)	(–7.14)	(–2.37)	(–16.56)	(–14.22)	(–6.82)	(–4.89)	(–6.62)
Constant	–1.079***	–5.277***	–4.825***	–1.129***	–5.262***	–5.627***	0.150***	–5.525***	–3.540***	–12.329***	–13.258***	–9.783***
	(–27.79)	(–26.16)	(–16.70)	(–28.64)	(–25.63)	(–19.19)	(91.02)	(–25.27)	(–11.42)	(–9.51)	(–10.07)	(–7.06)
Firm–level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,653	11,149	17,653	17,653	11,149	17,653	17,653	11,149	17,653	1,551	1,551	1,551
R–squared		0.718	0.378		0.718	0.375		0.718	0.382	0.464	0.462	0.473

Table 8: Effect of change in dividend payout policy on future investments of FIEs during crisis years.
This table reports the results for OLS pooled regression for the impact of change in dividend payout amount over two consecutive fiscal years on future firm-level investments for foreign invested Chinese listed firms from 2005–2014. The dependent variable is one-year ahead firm-level investments (Models 1, 3, 5, and 7) and under-investments (Models 2, 4, 6, and 8). The numbers in the parenthesis are the robust t-statistics for the regression coefficient with firm-level clustered standard errors. Panel A reports the results for the firm-years that increased their dividend payout amount from last fiscal year dividend payout and Panel B for the firm-years that decreased their dividend payout amount from last fiscal year. The definition of the variables is in Appendix A1. ***, **, * represent significance at the 1%, 5% and 10% level respectively.

	Panel A: Dividend Increase				Panel B: Dividend Decrease			
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.	F_INV	F_UNINV	F_INV	F_UNINV	F_INV	F_UNINV	F_INV	F_UNINV
D_DPS	−1.500	1.460			−1.097	1.520		
	(−1.45)	(1.37)			(−1.03)	(1.44)		
D_DPS * Crisis	1.432	−1.567			−4.113*	4.268**		
	(0.85)	(−0.93)			(−1.86)	(1.97)		
D_DPS * Crisis * FIE	−9.084**	9.065**			5.162	−5.365		
	(−2.05)	(2.00)			(0.63)	(−0.66)		
D_DIV_TA			−0.190	0.146			0.012	0.068
			(−1.10)	(0.83)			(0.09)	(0.55)
D_DIV_TA * Crisis			0.058	−0.057			−0.120	0.127
			(0.27)	(−0.27)			(−0.56)	(0.59)
D_DIV_TA * Crisis * FIE			−0.746*	0.748**			0.147	−0.191
			(−1.91)	(1.96)			(0.24)	(−0.31)
Crisis	−0.826	2.055***	−0.625	1.798***	−1.110	2.468***	−0.776	2.161***
	(−1.23)	(3.03)	(−1.00)	(2.86)	(−1.57)	(3.46)	(−1.05)	(2.89)
FIE	−0.665	0.414	−0.447	0.193	−0.486	0.301	−0.799	0.689
	(−1.13)	(0.70)	(−0.69)	(0.30)	(−0.66)	(0.41)	(−1.18)	(1.01)
TobinQ	0.243	−0.253*	0.130	−0.137	0.107	−0.116	0.122	−0.128
	(1.59)	(−1.69)	(1.02)	(−1.09)	(0.74)	(−0.81)	(0.77)	(−0.82)
Tang_Asset	−0.016	0.011	−0.024**	0.019	−0.018	0.011	−0.011	0.005
	(−1.22)	(0.87)	(−1.98)	(1.61)	(−1.40)	(0.88)	(−0.83)	(0.37)
ROA	0.099***	−0.062*	0.083***	−0.042	0.135***	−0.069**	0.171***	−0.107***
	(2.91)	(−1.84)	(2.65)	(−1.36)	(4.33)	(−2.25)	(5.04)	(−3.18)
SOE	−1.315***	1.266***	−1.255***	1.153***	−1.025***	0.931***	−0.921***	0.889***
	(−3.98)	(3.83)	(−3.97)	(3.67)	(−3.12)	(2.86)	(−2.68)	(2.61)
Board_Size	0.314***	−0.311***	0.248***	−0.245***	0.229**	−0.228**	0.241**	−0.236*
	(3.31)	(−3.31)	(2.66)	(−2.67)	(1.98)	(−1.99)	(1.97)	(−1.94)
Board_Ind	0.072***	−0.071***	0.064**	−0.065**	0.049*	−0.043	0.048*	−0.039
	(2.68)	(−2.69)	(2.44)	(−2.50)	(1.75)	(−1.55)	(1.65)	(−1.35)
Ln_MV	0.348*	−0.295	0.319*	−0.268	0.103	−0.095	0.132	−0.156
	(1.87)	(−1.58)	(1.79)	(−1.51)	(0.55)	(−0.51)	(0.70)	(−0.83)
Lev	−0.028**	0.027*	−0.047***	0.045***	−0.049***	0.045***	−0.044***	0.040***
	(−1.97)	(1.92)	(−3.40)	(3.33)	(−3.32)	(3.08)	(−2.90)	(2.60)
Constant	−2.071	9.681**	0.465	7.238*	4.599	3.426	3.634	4.952
	(−0.47)	(2.20)	(0.11)	(1.71)	(1.07)	(0.80)	(0.82)	(1.13)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,168	3,168	4,090	4,090	3,480	3,480	3,042	3,042
R-squared	0.19	0.05	0.17	0.04	0.16	0.05	0.17	0.05

Table 9: Robustness check for the effect of change in dividend payout policy on future investments of FIEs during crisis years using propensity-score matching

This table reports the results for OLS pooled regression for the impact of change in dividend payout amount over two consecutive fiscal years on future firm-level investments for Chinese listed firms from 2005–2014. The dependent variable is one-year-ahead firm-level investments (Models 1, 3, 5, and 7) and under-investments (Models 2, 4, 6, and 8). The numbers in the parenthesis are the robust t-statistics for the regression coefficient with firm-level clustered standard errors. Panel A reports the results for the firm-years that increased their dividend payout amount from last fiscal year dividend payout and Panel B for the firm-years that decrease their dividend payout amount from last fiscal year. We use PSM technique to match FIE and non-FIE firms based on market capitalization, leverage, return on assets, Tobin-Q, asset tangibility, industry of operation, and year of observation. The definition of the variables is in Appendix A1. ***, **, * represent significance at the 1%, 5%, and 10% level respectively

Model	Panel A: Dividend Increase				Panel B: Dividend Decrease			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.	F_INV	F_UNINV	F_INV	F_UNINV	F_INV	F_UNINV	F_INV	F_UNINV
D_DPS	3.851	−4.544			−4.403	6.587		
	(0.49)	(−0.63)			(−0.76)	(1.13)		
D_DPS * Crisis	2.222	−2.157			7.171*	−8.998**		
	(0.32)	(−0.35)			(1.82)	(−2.24)		
D_DPS * Crisis * FIE	−19.091***	18.395***			−2.753	3.441		
	(−2.81)	(2.70)			(−0.37)	(0.45)		
D_DIV_TA			−0.305	0.040			−0.735	1.144*
			(−0.55)	(0.08)			(−1.18)	(1.88)
D_DIV_TA * Crisis			−0.002	0.031			0.398	−0.682
			(−0.01)	(0.09)			(0.47)	(−0.82)
D_DIV_TA * Crisis * FIE			−1.175**	1.233***			−0.434	0.371
			(−2.33)	(2.55)			(−0.49)	(0.42)
Crisis	2.186	−0.978	1.989	−0.877	−0.516	0.804	−1.005	0.948
	(1.58)	(−0.77)	(1.57)	(−0.77)	(−0.54)	(0.85)	(−0.96)	(0.90)
FIE	−1.618*	0.754	−1.202	0.482	−0.829	0.188	−1.374	0.672
	(−1.75)	(0.83)	(−1.22)	(0.52)	(−0.77)	(0.17)	(−1.24)	(0.58)
TobinQ	−0.406	0.028	−0.471	0.088	0.815	−0.784	0.673	−0.584
	(−1.30)	(0.10)	(−1.49)	(0.31)	(1.59)	(−1.53)	(1.31)	(−1.12)
Tang_Asset	−0.029	−0.004	−0.020	−0.011	−0.068*	0.050	−0.063	0.045
	(−0.97)	(−0.12)	(−0.72)	(−0.41)	(−1.94)	(1.32)	(−1.62)	(1.04)
ROA	0.230**	−0.136	0.271***	−0.165*	0.165*	−0.100	0.144	−0.089
	(2.28)	(−1.39)	(2.87)	(−1.82)	(1.92)	(−1.20)	(1.49)	(−0.93)
SOE	−0.556	0.547	−1.077	0.960	0.303	−0.359	0.297	−0.078
	(−0.50)	(0.50)	(−0.98)	(0.90)	(0.27)	(−0.32)	(0.24)	(−0.07)
Board_Size	−0.244	−0.011	0.130	−0.322	0.334	−0.183	0.165	−0.005
	(−0.81)	(−0.04)	(0.39)	(−0.99)	(0.97)	(−0.54)	(0.59)	(−0.02)
Board_Ind	−0.091	0.028	−0.001	−0.055	0.102	−0.083	0.079	−0.051
	(−0.96)	(0.33)	(−0.01)	(−0.63)	(1.08)	(−0.90)	(0.90)	(−0.57)
Ln_MV	0.632	−0.505	0.420	−0.346	−0.991	0.895	−1.051*	0.831
	(0.90)	(−0.76)	(0.68)	(−0.60)	(−1.57)	(1.43)	(−1.74)	(1.32)
Lev	−0.063	−0.026	−0.077**	−0.012	−0.128***	0.088*	−0.114**	0.069
	(−1.62)	(−0.79)	(−2.13)	(−0.39)	(−3.09)	(1.94)	(−2.55)	(1.37)
Constant	0.076	12.182	−1.145	13.833	26.009**	−17.348	29.203**	−17.951
	(0.01)	(0.83)	(−0.09)	(1.09)	(2.17)	(−1.45)	(2.40)	(−1.43)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	266	266	342	342	266	266	238	238
R-squared	0.11	0.05	0.10	0.04	0.15	0.10	0.15	0.09

Table 10: Dividend change during the financial crisis and post–crisis recovery in profitability and growth

The table shows the level as well as the change of profitability in Models 1 and 2 (ROA and D_ROA) and sales growth in Models 3 and 4 (Sales_Growth and D_Sales_Growth) for sample firms during the post-crisis period of 2010–2014 due to increase of DPS during the crisis period from 2007 to 2009. DPS_inc_crisis is a dummy variable equal to 1 for the firms in the sample that increase their dividend payout during the crisis period. We use PSM technique to match FIE and non-FIE firms based on market capitalization, leverage, return on assets, Tobin-Q, industry of operation and year of observation. All regressions are OLS regressions conducted using this PSM-matched sample. The numbers in the parenthesis are the robust t–statistics for the regression coefficient with firm-level clustered standard errors. See Appendix A1 for variable definitions. ***, **, * represent significance at the 1%, 5%, and 10% level respectively.

Model	(1)	(2)	(3)	(4)
Dep. Var.	ROA	D_ROA	Sales_Growth	D_Sales_Growth
DPS_inc_crisis*FIE	–2.303***	–1.902**	–8.916***	–12.292***
	(–2.62)	(–2.34)	(–2.95)	(–2.75)
DPS_inc_crisis	0.730	0.883	–1.678	10.189*
	(0.64)	(1.06)	(–0.44)	(1.77)
FIE	0.862*	0.743**	–5.727	2.118
	(1.74)	(2.07)	(–1.49)	(0.22)
DPS	1.212***	0.876***	–0.739	2.942**
	(17.40)	(10.45)	(–1.52)	(2.77)
TobinQ	0.557**	0.355*	10.868***	12.578**
	(2.21)	(1.82)	(3.37)	(2.52)
Tang_Asset	0.047	0.012	0.295	–0.465**
	(1.47)	(0.31)	(1.28)	(–2.46)
ROA		–0.712***	–0.711	–2.598***
		(–19.35)	(–1.38)	(–3.74)
SOE	0.548	0.558**	–5.876*	1.747
	(1.75)	(2.42)	(–1.89)	(0.14)
Board_Size	–0.302***	–0.299***	0.391	–0.749
	(–3.72)	(–3.95)	(0.31)	(–0.50)
Board_Ind	–0.046	–0.047*	0.071	–0.889*
	(–1.44)	(–1.89)	(0.31)	(–2.03)
Ln_MV	1.539***	0.878***	4.434	1.801
	(9.73)	(3.71)	(1.49)	(0.56)
Lev	0.012	0.018*	0.122	0.398
	(1.15)	(2.08)	(0.67)	(1.46)
Constant	–28.778***	–13.056***	–104.331*	–35.407
	(–11.43)	(–3.02)	(–2.03)	(–0.56)
Industry effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	620	620	620	620
R–squared	0.378	0.376	0.224	0.151

Appendix A1: Detailed description of variables used in the analysis

This table presents a description of the firm characteristics and all proxy variables used in the analysis

Variable name	Variable description
FIE	Foreign invested enterprise dummy variable. FIE dummy is equal to one if the firm controlling shareholder is foreign investor or firm, otherwise zero.
DPS Ln_DIV DIV_TA	The total amount of common cash dividend distributed by the firm during a financial year. We use different forms of dividend payout variables in this study. DPS is common cash dividend per share. Ln_DIV is the natural logarithm of the common cash dividend distributed by the firm. DIV_TA is the common cash dividend distributed by the firm scaled by the total assets.
Crisis	A dummy variable. In EQ. (1) it equals to one for years 2007–2014; otherwise zero. In EQ. (4) it equals to one for years 2007-2009, otherwise zero.
Postcrisis	Postcrisis is the dummy, equal to one for years 2010–2014; otherwise zero.
TradeSh	Proportion of tradable shares listed on Shanghai and Shenzhen Stock Exchange scaled by the total number of outstanding shares.
No1Sh	Proportion of shares held by the largest shareholder in the firm scaled by the total number of outstanding shares.
SOE	A dummy variable equal to 1 if the firm controlling shareholder is government or its agency, otherwise 0.
ROA	Return on assets computed as earnings before interest and tax (EBIT) scaled by the total assets.
FCF	Firm free cash-flow (FCF) scaled by total assets. FCF is defined as in Lehn and Poulsen (1989).
OCF	Other cash flow in association with sales and operations scaled by total assets as in Huang, Shen, and Sun (2011).
Ln_MV	Natural logarithm of the year-end market capitalization of the firm.
TobinQ	Sum of market value of equity and book value of debt scaled by the book value of total assets of the firm.
Lev	Leverage is the book value of debt scaled by the total of firm market capitalization and debt value.
Tang_Asset	Ratio of tangible assets scaled by the total assets of the firm.
Lag_SEO / Lead_SEO	A dummy variable equal to 1 if the firm had a seasoned equity offering (SEO) or rights issue in the year before (*t-1*) or after (*t+1*) the year of observation (*t*).
Ex_Lev	The industry-year median adjusted financial leverage ratio calculated as the firm-year leverage ratio minus the industry-year median leverage ratio.
InsSh	Proportion of shares held by the institutional shareholders in the firm scaled by the total number of outstanding shares.
Board_Size	Board size is the total number of board-directors sitting on the company's board in a fiscal year.
Board_Ind	Board independence is the ratio of outside directors divided by the board size.
D_DPS D_DIV_TA	D_DPS is the change of cash dividend per share from last fiscal year. D_DIV_TA is the change of total cash dividend from last fiscal year scaled by total assets.
INV	The capital investment scaled by the lagged total assets.
UNINV	The predicted capital investment minus the actual capital investment defined as in Biddle, Hilary, and Verdi (2009) and Chen, Hope, et al. (2011)
Sales_Growth	Change in sales over two consecutive fiscal years, scaled by the total assets of year 1.
SY_2010-12	Dummy variable that takes the value of 1 for years 2010–2012, when there was effectively no financial crisis for the falsification test, and 0 otherwise.
Post_SY_2010-12	Dummy variable that takes the value of 1 for the years 2013–2014; and otherwise 0 for the falsification test.
ORECTA	It is balance of firm's "other receivables" scaled by its total assets (Jiang et al., 2010).
RPSTA	It is the total value of related-party sales scaled by total assets.
EXCON	Controlling shareholders' excess control rights. This equals to the percentage control rights minus their cash flow rights in the fiscal year-end. Cash flow rights are measured by the sum of the products of the proportion of ownership along the control chains, and the control rights are measured by the minimum proportion of ownership along the control chains.
CEO_Duality	A dummy variable equal to 1 for the duality of CEO and Chairman in the firm, *i.e.* if the CEO and the Chairman of the board is the same person, otherwise 0.

Appendix A2: **Correlation matrix**

		DPS	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
(1)	Ln_DIV	0.49																						
(2)	DIV_TA	0.75	0.43																					
(3)	FIE * Crisis	0.03	0.01	0.05																				
(4)	FIE	0.02	0.01	0.04	0.91																			
(5)	SOE	-0.06	0.25	-0.11	-0.17	-0.19																		
(6)	TradeSh	-0.15	0.09	-0.19	0.02	-0.01	0.19																	
(7)	No1Sh	0.15	0.28	0.13	0.02	0.01	0.19	-0.24																
(8)	ROA	0.42	0.36	0.48	0.02	0.00	-0.09	-0.13	0.12															
(9)	FCF	-0.10	0.11	-0.04	0.00	0.00	0.15	0.27	0.03	-0.04														
(10)	OCF	-0.12	-0.08	-0.14	0.00	0.02	-0.01	0.04	-0.08	-0.13	-0.01													
(11)	TobinQ	0.00	-0.09	0.00	0.04	0.04	-0.01	-0.01	-0.01	-0.03	0.00	0.05												
(12)	Ln_MV	0.31	0.74	0.24	0.00	-0.03	0.14	0.14	0.24	0.36	0.03	-0.15	0.00											
(13)	Lev	-0.19	0.19	-0.33	-0.05	-0.02	0.32	0.19	0.09	-0.30	0.17	0.04	-0.01	-0.06										
(14)	InsSh	0.18	0.36	0.12	0.04	0.00	0.17	0.53	0.21	0.20	0.12	-0.10	-0.01	0.51	0.05									
(15)	Lag_SEO	-0.02	0.08	-0.03	-0.01	-0.02	0.02	0.04	0.02	0.02	0.04	-0.02	0.00	0.15	0.06	0.10								
(16)	Lead_SEO	-0.04	-0.03	-0.05	-0.01	-0.01	-0.07	0.08	-0.02	0.03	0.07	-0.01	0.00	0.10	0.00	0.08	0.04							
(17)	INV	0.14	0.03	0.13	-0.03	-0.01	-0.07	-0.22	0.07	0.23	-0.24	-0.13	-0.01	0.13	-0.09	0.04	0.03	0.05						
(18)	UNINV	-0.11	0.00	-0.09	0.04	-0.01	0.09	0.20	-0.06	-0.19	0.25	0.08	0.00	-0.11	0.06	-0.03	-0.03	-0.07	-0.94					
(19)	D_DPS	0.24	0.18	0.22	0.01	0.01	0.09	0.09	0.00	0.07	-0.06	0.03	0.00	0.05	0.06	0.05	-0.01	-0.01	-0.04	0.02				
(20)	D_DIV	0.34	0.22	0.41	0.01	0.01	0.01	0.00	0.01	0.19	-0.05	0.00	0.00	0.10	-0.03	0.07	0.01	0.00	0.01	-0.01	0.84			
(21)	Tang_Asset	0.25	-0.17	0.39	0.01	0.00	-0.27	-0.27	0.01	0.28	-0.21	-0.17	-0.01	-0.02	-0.73	-0.09	-0.06	-0.09	0.10	-0.07	-0.10	0.00		
(22)	Board_Size	0.06	0.25	0.03	-0.06	-0.06	0.26	0.02	0.03	0.03	0.06	-0.04	-0.02	0.18	0.19	0.10	0.03	-0.03	0.06	-0.03	0.02	0.02	-0.14	
(23)	Board_Ind	-0.01	0.01	-0.02	0.02	0.01	-0.09	0.03	0.04	-0.01	-0.03	0.01	0.01	0.08	-0.03	0.02	0.01	0.02	0.00	-0.01	-0.02	-0.01	0.03	-0.36

Appendix A3: Robustness check for the dividend payout policy by foreign controlled Chinese firms (FIEs) during crisis years, while controlling for additional aspects of corporate governance and board constitution.

The table reports the results for different regression techniques across various payout parameters for Chinese listed firms from 2005–2014. The dependent variable for Models 1, 2 and 3 is dividend per share (DPS) using Tobit regression and for 4, 5 and 6 is dividend scaled by total assets (DIV_TA) using pooled OLS regression. The numbers in the parenthesis are the robust T-statistics for the regression coefficient with firm-level clustered standard errors. To reduce the endogeneity problem, all the continuous independent variables are lagged by one year. We use PSM technique to match FIE and non-FIE firms based on market capitalization, leverage, return on assets, Tobin-Q, industry of operation and year of observation. See Appendix A1 for variable definitions. ***, **, * represent significance at the 1%, 5%, and 10% level respectively.

Model	(1)	(2)	(3)	(4)	(5)	(6)
Method	Tobit	Tobit	Tobit	OLS	OLS	OLS
Sample	All Firms	All Firms	All Firms	All Firms	All Firms	All Firms
Dep. Var.	DPS	DPS	DPS	DIV_TA	DIV_TA	DIV_TA
FIE * Crisis * Ex_Lev		−0.001*			−0.027***	
		(−1.69)			(−4.96)	
Ex_Lev		−0.001**			−0.012***	
		(−2.12)			(−3.40)	
FIE * Crisis * InsSh			0.002***			0.010**
			(3.93)			(2.58)
InsSh			0.001*			0.004
			(1.84)			(1.25)
FIE * Crisis	0.073**	0.072**	0.021	0.588**	0.592**	0.354
	(2.10)	(2.07)	(0.58)	(2.23)	(2.22)	(1.28)
FIE * Postcrisis	−0.070***	−0.072***	−0.081***	−0.363*	−0.436**	−0.505**
	(−3.20)	(−3.31)	(−3.76)	(−1.82)	(−2.22)	(−2.50)
Crisis	−0.083**	−0.055	−0.057	−1.928***	−1.498***	−1.811***
	(−2.26)	(−1.54)	(−1.61)	(−6.53)	(−5.14)	(−6.10)
Postcrisis	0.083***	0.078***	0.086***	0.500**	0.446**	0.578**
	(3.93)	(3.69)	(4.12)	(2.20)	(1.99)	(2.56)
FIE	−0.018	−0.019	−0.014	−0.065	−0.102	−0.065
	(−0.61)	(−0.65)	(−0.48)	(−0.29)	(−0.44)	(−0.29)
TradeSh	−0.000	−0.000	−0.001***	0.000	−0.000	−0.005**
	(−0.57)	(−0.66)	(−3.60)	(0.16)	(−0.01)	(−1.97)
No1Sh	0.001**	0.001**	0.000	0.006	0.005	0.002
	(2.16)	(2.04)	(0.58)	(1.57)	(1.31)	(0.46)
SOE	−0.010	−0.015	−0.006	−0.189	−0.316***	−0.158
	(−0.71)	(−1.04)	(−0.40)	(−1.59)	(−2.62)	(−1.35)
ORECTA	−0.008***	−0.008***	−0.006***	−0.009	−0.010	−0.006
	(−3.90)	(−4.00)	(−3.35)	(−0.83)	(−0.97)	(−0.53)
RPSTA	−0.000	−0.000	−0.000	0.001	0.002	0.001
	(−0.98)	(−0.95)	(−1.21)	(0.34)	(0.53)	(0.26)
EXCON	−0.000	−0.000	−0.001	−0.004	−0.003	−0.005
	(−0.59)	(−0.59)	(−0.83)	(−0.72)	(−0.64)	(−0.92)
CEO_Duality	0.012	0.013	0.011	0.132	0.147	0.140
	(0.96)	(1.05)	(0.92)	(1.15)	(1.29)	(1.22)
Board_Size	0.005	0.005	0.003	−0.003	−0.015	−0.008
	(1.37)	(1.22)	(0.83)	(−0.12)	(−0.58)	(−0.32)
Board_Ind	0.000	0.000	−0.000	−0.014	−0.015	−0.013
	(0.20)	(0.20)	(−0.01)	(−1.47)	(−1.59)	(−1.44)
Constant	−1.618***	−1.699***	−1.272***	−11.510***	−12.734***	−9.331***
	(−9.22)	(−9.72)	(−7.25)	(−8.14)	(−8.90)	(−6.20)
Firm–level Financial Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,370	1,370	1,370	1,375	1,375	1,375
R–squared				0.501	0.506	0.509

Appendix A4: A falsification test for fictional exogenous crisis years of 2010–12 using propensity-score matching on the dividend payout policy of foreign-controlled Chinese firms.

The table reports the results for different regression techniques across various payout parameters for Chinese listed firms from 2005–2014, using 2010–2012 as the years of fictional exogenous financial crisis. The dependent variable for Models 1, 2 and 3 is dividend per share (DPS) using Tobit regression; for Models 4, 5 and 6 is dividend scaled by total assets (DIV_TA) using pooled OLS regression. The numbers in the parenthesis are the robust t-statistics for the regression coefficient with firm-level clustered standard errors. To reduce the endogeneity problem, all the continuous independent variables are lagged by one year. We use PSM technique to match FIE and non-FIE firms based on market capitalization, leverage, return on assets, Tobin-Q, industry of operation and year of observation. The definition of the variables is in Appendix A1. ***, **, * represent significance at the 1%, 5%, and 10% level respectively.

Model	(1)	(2)	(3)	(4)	(5)	(6)
Method	Tobit	Tobit	Tobit	OLS	OLS	OLS
Sample	All firms	All firms	All firms	All firms	All firms	All firms
Dep. Var.	DPS	DPS	DPS	DIV_TA	DIV_TA	DIV_TA
FIE * SY_2010-12 * Ex_Lev		−0.001*			−0.021***	
		(−1.70)			(−3.83)	
Ex_Lev		−0.002***			−0.019***	
		(−5.39)			(−6.34)	
FIE * SY_2010-12 * InsSh			0.001			0.003
			(1.32)			(0.75)
InsSh			0.002***			0.009***
			(4.99)			(2.89)
FIE * SY_2010-12	−0.030	−0.034	−0.053*	−0.160	−0.175	−0.274
	(−1.33)	(−1.48)	(−1.89)	(−0.88)	(−0.97)	(−1.16)
FIE * Post_SY_2010-12	0.011	0.010	0.005	0.159	0.129	0.088
	(0.45)	(0.42)	(0.21)	(0.74)	(0.61)	(0.41)
SY_2010-12	0.023	0.060**	0.029	−0.634***	−0.328	−0.579**
	(0.78)	(2.03)	(0.98)	(−2.77)	(−1.46)	(−2.50)
Post_SY_2010-12	−0.018	−0.007	−0.004	−0.404*	−0.280	−0.288
	(−0.75)	(−0.28)	(−0.16)	(−1.91)	(−1.34)	(−1.37)
FIE	0.014	0.013	0.014	0.279**	0.231*	0.288**
	(0.82)	(0.72)	(0.81)	(2.05)	(1.67)	(2.13)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,542	1,542	1,542	1,548	1,548	1,548
R-squared				0.46	0.46	0.47

Appendix A5: A falsification test about a fictional exogenous crisis year of 2010-12 using propensity-score matching for the effect of change in dividend payout policy on future investments of FIEs.

The table reports the results for OLS pooled regression for the effect of change in dividend payout amount over two consecutive fiscal years on future firm-level investments for Chinese listed firms from 2005–2014 using 2010–2012 as the year of fictional exogenous financial crisis. The dependent variable is one-years ahead firm-level investments (Models 1, 3, 5, and 7) and under-investments (Models 2, 4, 6, and 8). The numbers in the parenthesis are the robust t-statistics for the regression coefficient with firm-level clustered standard errors. Panel A reports the results for the firm-years that increased their dividend payout amount from last fiscal year dividend payout and Panel B for the firm-years that decreased their dividend payout amount from last fiscal year. We use PSM technique to match FIE and non-FIE firms based on market capitalization, leverage, return on assets, Tobin-Q, asset tangibility, industry of operation and year of observation. The definition of the variables is in Appendix A1. ***, **, * represent significance at the 1%, 5%, and 10% level respectively.

	Panel A: Dividend Increase				Panel B: Dividend Decrease			
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.	F_INV	F_UNINV	F_INV	F_UNINV	F_INV	F_UNINV	F_INV	F_UNINV
D_DPS	−0.005	−3.657			2.670	−1.403		
	(−0.00)	(−0.45)			(0.43)	(−0.20)		
D_DPS * SY_2010-12	−3.493	5.672			−3.557	6.220		
	(−0.27)	(0.48)			(−0.35)	(0.63)		
D_DPS * SY_2010-12 * FIE	1.004	4.802			−8.484	4.799		
	(0.08)	(0.43)			(−0.88)	(0.51)		
D_DIV_TA			−0.830	0.533			−0.412	0.500
			(−1.40)	(1.07)			(−0.62)	(0.72)
D_DIV_TA * SY_2010-12			1.142	−0.801			−0.187	0.838
			(0.86)	(−0.63)			(−0.12)	(0.61)
D_DIV_TA * SY_2010-12 * FIE			−1.097	1.159			−0.376	−0.212
			(−0.87)	(0.95)			(−0.26)	(−0.17)
SY_2010-12	−1.099	0.777	−1.148	1.128	−1.615	2.308**	−1.058	2.030*
	(−0.89)	(0.67)	(−1.16)	(1.19)	(−1.48)	(2.12)	(−0.87)	(1.71)
FIE	−2.518**	1.320	−1.298	0.574	−1.479	0.662	−1.670	0.681
	(−2.50)	(1.35)	(−1.37)	(0.65)	(−1.15)	(0.50)	(−1.29)	(0.52)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	263	263	342	342	265	265	237	237
R-squared	0.10	0.04	0.08	0.04	0.15	0.09	0.14	0.09