Fintech and Dividend Payouts: Evidence from China

Abstract:

The rapid development of financial technologies (fintech) has significantly transformed the Chinese financial industry, which practitioners and academics well recognize. This study investigates how innovative technologies influence firm dividend policies. Utilizing data from Chinese-listed firms spanning 2011 to 2022, we find a positive relationship between fintech development and firm cash dividend payments. The results remain robust across various tests, including difference-in-differences, regional exclusions, and alternative measures. Mechanism analysis reveals that fintech developments alleviate firms' financial constraints, thereby enhancing their capacity to distribute cash dividends. Our further analysis does not support the monitoring channel through which digital finance influences dividend policies. We find no significant impact of fintech on stock dividends and share repurchases, suggesting that fintech has less influence on flexible payout methods. Our study provides novel insights into understanding payout policies in the context of ongoing technological advancements in the financial sector.

Keywords: Fintech Development; Dividend Payouts; Cash Dividends; Financial Constraints

1. Introduction

This paper investigates the effect of financial technology (fintech) on dividend payouts of Chinese firms. Fintech integrates cutting-edge technologies such as big data, blockchain, and artificial intelligence into the finance sector, driving a significant financial industry transformation. For instance, China's two leading mobile payment service providers, Alipay and WeChat Pay, are predicted to have approximately 2.5 billion total active users by 2025 (Statista, 2024a). Similarly, WeBank, the first Chinese digital challenger bank, has experienced a remarkable nine-fold growth in total assets over six years, reaching a value of approximately 663 billion US dollars in 2022 (Statista, 2024b). Government support for digital technologies and infrastructure drives the sustained growth of the Chinese fintech industry (McKinsey Global Institute, 2017), unfulfilled financial needs of SMEs and rural areas (Huang & Wang, 2011; WeBank, 2019; Hua & Huang, 2021), and a comparatively liberal regulatory framework supporting innovation (Huang & Wang, 2011; Hua & Huang, 2021). Therefore, the Chinese financial market provides a unique opportunity to explore fintech development, offering insights into other emerging economies (Goldstein et al., 2019).

Existing literature suggests that fintech contributes to reducing data-collection costs and improving information quality (Bloom et al., 2014; Allen et al., 2021; Jiang et al., 2022), easing firms' capital access (Ding et al., 2022; Lin et al., 2022; Lin & Ma, 2022), and enhancing operational efficiency (Dorantes et al., 2013; Mikalef et al., 2020). However, whether and how these innovations translate into investor returns remains underexplored.

We focus on dividends as a key form of investor return. The China Securities Regulatory Commission (CSRC) has enacted numerous regulations to encourage dividend payments since 2001 to protect investors (He & Li, 2018; Yin & Nie, 2021). However, some firms remain reluctant to pay dividends due to precautionary motives arising from persistent financing constraints in an underdeveloped capital market (Allen et al., 2005; Huang et al., 2011). We predict that fintech motivates firms to pay dividends because it helps alleviate financing difficulties and agency problems.

Analyzing 25,410 firm-year observations from Chinese firms listed on the Shanghai and Shenzhen Stock Exchanges between 2011 and 2022, we find a positive relationship between fintech development and firm cash dividend payments. The findings remain unchanged under robustness checks, including adopting the difference-in-differences (DID) method, regional exclusions, and alternative measures. Mechanism analysis confirms that fintech eases firm financial constraints, increasing the likelihood of cash dividend distribution. We do not find evidence that fintech promotes other dividend payout methods, such as share repurchases and stock dividends, nor that it serves as an external monitoring mechanism in dividend payment decisions. Further analysis reveals that the impact of fintech on cash dividend payments varies across industries and regions.

Our study responds to the current call for investigating the influence of digital finance in emerging markets (Goldstein et al., 2019). Our research adds to the literature on how local fintech development in China influences firm decision-making. Prior studies show that fintech promotes firm investment and innovation by easing credit frictions, expanding loan access, and intensifying competition in the financial sector (Ding et al., 2022; Lin et al., 2022; Lin & Ma, 2022). Unlike most studies that focus on investment decisions, we shed light on the impact of fintech on dividend payouts, offering new determinants for understanding the timing and methods by which Chinese firms distribute dividends. Our findings suggest that fintech reduces precautionary motives, thereby promoting cash dividend payments. This finding extends the theory by identifying cash dividend payout as a new outcome influenced by fintech via reduced precautionary motives. These insights have policy implications, particularly for promoting financial inclusion in Chinese central and western regions.

The remainder of the paper is organized as follows: Section 2 reviews the literature and develops the hypothesis. Section 3 describes the data and methodology. Section 4 presents the results and robustness checks. Section 5 explores the underlying mechanisms. Section 6 offers additional analysis, and section 7 concludes the findings.

2. Literature review and hypothesis development

2.1 The impact of fintech

Traditional Chinese banks have historically struggled to serve SMEs and startups due to high costs and information asymmetry (Agarwal & Hauswald, 2010; Huang et al., 2023). Fintech has emerged as a transformative force, providing more accessible and efficient financial services (Vives, 2017; Yao & Song, 2023; Goel & Kashiramka, 2025). Compared with traditional institutions, fintech firms offer innovative channels such as crowdfunding, mobile payments, and online lending, which reduce reliance on collateral and shorten approval times (Buchak et al., 2018). Rather than replacing traditional banks, fintech often complements them. Chinese commercial banks increasingly adopt fintech technologies or establish fintech subsidiaries to enhance service delivery (Navaretti et al., 2018; Zhang et al., 2022). Reflecting this complementarity, Lin et al. (2022) find that fintech improves credit access for micro and small firms in China by reducing information asymmetry between lenders and borrowers, which enhances investment opportunities and increases new investment applications. Similarly, Lin and Ma (2022) demonstrate that fintech stimulates green innovation in Chinese firms by increasing the loan balance per capita. Moreover, Ding et al. (2022) show that fintech fosters firm innovation by increasing the funds available to firms due to the rivalry between fintech firms and traditional financial institutions.

Fintech also assists investors by providing tools that enhance decision-making efficiency. In the Chinese retail-dominated stock market, big data analytics generate insights from large trading volumes and financial data, enabling informed and timely investments (Zhu, 2019). Machine learning enhances portfolio strategies by forecasting market trends (Brogaard & Zareei, 2023). Investors increasingly prefer robo-advisors for their accessibility, speed, and lower cost compared to traditional advisors (Uhl & Rohner, 2018).

In addition, fintech improves internal firm operations. Technologies like blockchain and cloud computing reduce interdepartmental information asymmetry and improve communication, strengthening internal controls while lowering costs (Jiang et al., 2022). Firms adopt big data to assess customer preferences and market conditions, enhancing demand forecasting (Dorantes et al., 2013). Advanced technologies further support managers in identifying risks and improving investment efficiency (Chen & Jiang, 2024).

2.2 The determinants of dividend payment

Signaling, precautionary, and agency considerations drive firms' dividend decisions. Signaling theory suggests firms use dividends to convey future profitability and stability (Bhattacharya, 1979; Healy & Palepu, 1988). Firms distributing dividends often experience favorable investor responses and report more stable earnings (Asquith & Mullins Jr, 1983; Skinner & Soltes, 2011).

However, many firms are reluctant to distribute dividends, primarily driven by precautionary motives. Specifically, firms prefer to build cash reserves to hedge against unexpected cash shortages and finance future investments, especially for those with high financial constraints (Keynes, 1936; Fazzari et al., 1988a; Kaplan & Zingales, 1997). Economic crises exacerbate this pattern; for instance, dividend payouts dropped sharply during the global financial crisis and the COVID-19 pandemic (Bliss et al., 2015; Liang et al., 2023).

Agency theory suggests that weak governance allows managers to hoard cash rather than return it to shareholders (Jensen, 1986). High external financing costs further increase the opportunity cost of paying dividends (Ellahie & Kaplan, 2021). To encourage more consistent payouts and protect minority investors, China has implemented dividend-related regulations since 2001. In 2013, the CSRC mandated that listed companies specify dividend policies in their articles of association, with a minimum cash payout ratio of 80%, 40%, or 20% of distributable profits, depending on firm maturity (CSRC, 2013).

2.3. Hypothesis development

From a precautionary motive perspective, firms hoard cash to guard against potential future liquidity shortfalls (Keynes, 1936; Fazzari et al., 1988a; Almeida et al., 2004; Han & Qiu, 2007). Underlying this theoretical frame, empirical evidence suggests that financially constrained firms prefer to retain cash rather than distribute it as dividends (Opler et al., 1999; Bates et al., 2009; Chang et al., 2014). This tendency intensified during the economic and social crises (Bliss et al., 2015; Luo & Tian, 2022; Liang et al., 2023).

Fintech can alleviate these external constraints by improving loan access (Agarwal & Hauswald, 2010; Jagtiani & Lemieux, 2018), fostering both competition and cooperation among banks (Cetorelli & Strahan, 2006; Navaretti et al., 2018), and enhancing equity-market liquidity (Gu et al., 2020; Brogaard & Zareei, 2023). It also strengthens internal finance through stronger controls and risk management (Bloom et al., 2014; Allen et al., 2021) and smarter cash-flow and investment decisions (Dorantes et al., 2013; Mikalef et al., 2020; Wang et al., 2021). By easing financial constraints and boosting slack for profitable investments, fintech might encourage firms to adopt less conservative cash dividend policies (Preinreich, 1932; Miller & Modigliani, 1961).

From an agency perspective, Jensen and Meckling (1976) suggest that separating ownership and control gives rise to agency costs, as managers may act in their own interests. When entrenched managers face few profitable opportunities, they hoard discretionary cash to preserve private benefits (Jensen, 1986; Dittmar & Mahrt-Smith, 2007). International evidence suggests that firms maintain higher cash reserves in countries with severe agency problems (Dittmar et al., 2003). Since 2001, the CSRC has steadily tightened dividend-payment rules for Chinese-listed firms to mitigate agency conflicts and safeguard investors, leading to a rise in both the number of firms paying cash dividends and aggregate payout ratios (Allen et al., 2005; CSRC, 2013; Tao et al., 2022). By increasing information transparency and reducing monitoring costs (Bloom et al., 2014; Allen et al., 2021; Jiang et al., 2022), and by empowering minority shareholders through digital governance tools such as online voting platforms (Feng et al., 2021), fintech further strengthens corporate governance, limiting managerial discretion over cash hoarding or misallocation (Adjaoud & Ben-Amar, 2010; Jiraporn et al., 2011; Ding et al., 2022; Lin et al., 2022; Lin & Ma, 2022).

Building on the foregoing arguments, we expect that fintech development will enable firms to distribute more cash dividends by alleviating financing constraints and agency frictions. Therefore, we propose the first hypothesis.

Hypothesis 1 (H1): There is a positive relationship between the fintech development and firm cash dividend payouts.

The benefits of fintech innovations are unlikely to increase stock dividend payouts or share repurchases. Stock dividends, traditionally employed by certain Chinese firms to alleviate financing constraints and signal confidence (Wei & Xiao, 2009), may lose their appeal as fintech innovations mitigate those constraints, thereby reducing firms' motivation to distribute them. Moreover, stock dividends enlarge the equity base and dilute earnings per share (Crawford et al., 2005; Wei & Xiao, 2009). Share repurchases are rarer in China than in the US or Europe because the Chinese Company Law prohibits them in principle except in certain circumstances, such as capital reduction, merger-related acquisitions, and employee-share incentive schemes (Wei & Xiao, 2009; Ren et al., 2024).

Accordingly, we do not expect fintech development to significantly improve stock dividends or share repurchases. Therefore, we propose the second hypothesis.

Hypothesis 2 (H2): Fintech development has no significant relationship with firm stock dividends or share repurchases.

3. Data and methodology

3.1 Sample selection

Our sample includes firms listed on the Shanghai Stock Exchange and the Shenzhen Stock Exchange. We primarily collect firm-level data from the China Stock Market and Accounting Research (CSMAR) and Chinese Research Data Services (CNRDS) databases. We obtain city-level fintech data from the Institute of Digital Finance at Peking University and Ant Financial Services Group (Guo et al., 2020). We derive city-level control variables from the National Bureau of Statistics of China. We delete the data from the financial and special treatment (ST or *ST) firms. Our sample is from 2011 to 2022 as the city-level fintech data is available from 2011. We winsorize all continuous variables at the 1^{st} and 99^{th} percentiles to alleviate the influence of outliers.

3.2. Measuring dividend payment

Following the methodology of Brockman and Unlu (2009) and Tao et al. (2022), we use total cash dividends divided by total assets (*Dividend/TA*) or total sales (*Dividend/Sales*) as two proxies for cash dividend payments. These two proxies are preferable to the earnings-scaled payout ratio for two primary reasons. First, the earnings-scaled payout ratio requires removing observations with negative earnings, which reduces the sample size (Brockman & Unlu, 2009). Second, earnings-scaled payout ratio is unreliable as it is easily manipulated (Liu & Lu, 2007).

In addition to cash-dividend measures, we also capture firms' stock dividends and share repurchase policies through two dummy variables: *StockDividend*, which equals one if the firm announced a stock dividend plan and zero otherwise (Li et al., 2025) and *ShareRepurchase*, which equals one if the firm implemented a share repurchase decision and zero otherwise (Ren et al., 2024).

3.3. Measuring fintech

Following other Chinese fintech studies (Ding et al., 2022; Guo et al., 2023), we use the Peking University Digital Financial Inclusion Index of China (PKU-DFIIC) to measure the fintech development. The joint efforts of the Research Institute at Ant Group and the research team from the Institute of Digital Finance at Peking University created this index. The index encompasses data from 31 provinces, 337 cities, and approximately 2,800 counties, providing a comprehensive overview of digital financial inclusion across China. It assesses three main dimensions: coverage breadth, usage depth, and digitization level, with subindices including payment, credit, insurance, investment, and money funds. Various dimensions of digital financial inclusion indicators encompass different aspects of fintech. However, relying on these dimensions in isolation may inefficiently capture a comprehensive image of digital financial inclusion. Therefore, the research team creates city-level and county-level aggregate indicators. City-level data are available from 2011 to 2022, whereas county-level data are available from 2014 to 2022. To maximize the sample size, our study employs the logarithm of the city-level aggregated fintech index for the primary analysis. It utilizes the county-level aggregated fintech index for robustness tests.

3.4 Regression model

To test the relationship between fintech and firm dividend payments, we develop the following regression model:

$$Dividend_{i,t} = \alpha + \beta \times Fintech_{i,t} + \gamma \times Z_{i,t} + Year\ fixed\ effect + Firm\ fixed\ effect + \varepsilon_{i,t}, \quad (1)$$

where *Dividend* is the dependent variable, when testing the impact of fintech on cash dividends (H1), it represents cash dividends measured by two proxies, *Dividend/TA* and *Dividend/Sales*. When testing the impact of fintech on share repurchases and stock dividends (H2), it is proxied by *ShareRepurchase* and *StockDividend*, respectively. The variable of interest is *Fintech*. *Z* represents a vector of control variables. Following previous studies (Ding et al., 2022; Tao et al., 2022), we control for firm characteristics and city characteristics. Firm characteristics include firm size (*Size*), leverage (*Leverage*), cash flow (*Cashflow*), firm age (*FirmAge*), state-owned enterprises (*SOE*), return on assets (*ROA*), sales growth (*Growth*), and book-to-market ratio (*BM*). City characteristics include city-level financial development (*FD*), city-level GDP growth (*GDPgr*), and city-level aggregate innovation (*CityInno*). We include year and firm dummies to control for year- and firm-specific effects. Appendix A defines all variables.

3.5 Summary statistics and pairwise correlations

The descriptive statistics of the primary variables are detailed in table 1. The mean values of *Dividend/TA* and *Dividend/Sales* are 0.013 and 0.027, respectively. This indicates that, on average, dividends paid by firms constitute 1.3% of total assets and 2.7% of operating revenue. For both *Dividend/TA* and *Dividend/Sales*, at least 25% of the firm-year observations in our sample have a value of zero, indicating that these firms did not distribute dividends during those years. The mean values of *StockDividend* and *ShareRepurchase* are 0.023 and 0.142, respectively, indicating that 2.3% and 14.2% of firm-year observations adopt these payout methods (Wei & Xiao, 2009; Ren et al., 2024; Li et al., 2025). The mean and median values of *Fintech* are 5.391 and 5.523, respectively. These values are slightly higher than those reported by Ding et al. (2022), who used a fintech index from 2011 to 2019. Our data extends to 2022, indicating that Chinese fintech has been growing during the 2019–2022 period, consistent with the previous findings (Statista, 2024a, 2024b). The summary statistics of control variables align with prior studies (Ding et al., 2022; Tao et al., 2022).

[insert Table 1 here]

The correlation matrix is displayed in table 2. Without controlling for other factors, *Fintech* exhibits a positive association with *Dividend/TA* and *Dividend/Sales* at the 1% significance level, supporting our prediction that fintech enhances cash dividend payments. *StockDividend* is negatively correlated with *Fintech,* and *ShareRepurchase* is positively correlated with *Fintech*. Additionally, the correlations between the independent (*Fintech*) and control variables remain below 0.5, and untabulated values of variance-inflating factors (VIFs) are lower than the threshold of 10, indicating that multicollinearity does not pose a concern in our regression analysis.

[insert Table 2 here]

4. Results

4.1 Baseline results

4.1.1 Regression result - H1

Table 3 presents the regression results of equation (1) when the dependent variable is cash dividend. Column 1 uses our first proxy for cash dividend payment, *Dividend/TA*, as the dependent variable, which we calculate as cash dividend divided by total assets. Column 2 uses our second proxy for dividend payment, *Dividend/Sales*, as the dependent variable, which we calculate as the cash dividend divided by operating revenue. In the first two columns, we introduce city-level fintech (*Fintech*) and firm-fixed and year-fixed effects. Our findings indicate that fintech exhibits a positive coefficient at the 1% significance level, demonstrating a significant positive relationship between fintech and dividend payments. These results are robust across different measures of dividends.

[insert Table 3 here]

In columns 3 and 4, we include firm and city characteristics in the regression. We find that the coefficient of *Fintech* remains significantly positive. All the estimated coefficients of the control variables align with the existing literature (Cao et al., 2017; Tao et al., 2022). For example, firm size (*Size*) is significantly positively associated with dividend payments, suggesting that larger firms are more inclined to pay dividends. Leverage (*Leverage*) is significantly negatively linked to dividend payments, implying that highly leveraged firms are less likely to distribute cash to shareholders. Overall, the results support our first hypothesis, suggesting that fintech is positively associated with cash dividend payment.

4.1.2 Regression result - H2

Table 4 presents the regression results of equation (1), where the dependent variables are stock dividends and share repurchases. Columns 1 and 2 show that the coefficients on *Fintech* are statistically insignificant, indicating that we do not find that fintech significantly affects firms’ use of stock dividends or share repurchases.

This result is consistent with our hypothesis. In China, stock dividends are often used as signaling or financing tools, and share repurchases remain uncommon due to legal and institutional constraints. With improved financing access through fintech, firms may reduce reliance on these payout methods (He et al., 2009; Wei & Xiao, 2009; Ren et al., 2024).

[insert Table 4 here]

4.2 Robustness test

4.2.1 Reverse causality

Our empirical analysis demonstrates that the fintech development increases firm cash dividend payments. However, there is a concern that firm dividend payments might affect fintech development. Specifically, on the one hand, firms that pay high dividends may allocate fewer resources to innovation or digitalization (He & Li, 2018), which could reduce their contribution to regional digital infrastructure. On the other hand, stable dividend-paying firms may attract more retail investors and financial activity (Graham & Kumar, 2006), potentially promoting fintech development in the local area. To address this concern, we first use the forward term of dividend payment as the dependent variable (*F. Dividend/TA* and *F. Dividend/Sales*) in the baseline regression. As shown in table 5, *Fintech* has a significantly positive coefficient, which is consistent with our previous finding.

[insert Table 5 here]

To further mitigate the reverse causality concern, we employ a DID design. Specifically, following previous studies (Ding et al., 2022), we use the Chinese 4G services implementation as an exogenous shock. The rationale is that 4G has accelerated the data transfer speeds of mobile networks, which has led to the rapid growth of fintech-related areas such as e-commerce, mobile payments, online banking services, and P2P lending platforms.

Since 2010, the Ministry of Industry and Information Technology of China has approved several cities as pilot areas for 4G communications technology. The detailed 4G implementation status is as follows: Shanghai, Hangzhou, Nanjing, Guangzhou, Shenzhen, and Xiamen have realized 4G networks since 2013; Beijing, Qingdao, Wenzhou, Tianjin, Shenyang, Chengdu, and Fuzhou since 2014; and the rest of the cities have realized 4G networks since 2015. The timing of implementation accurately reflects the actual deployment and utilization of 4G networks in each city. To avoid data errors due to the difference between approval time and implementation time, we define a dummy variable (*4G*) that equals one in the year a city implements a 4G network and zero otherwise.

[insert Table 6 here]

Table 6 presents the results of the DID analysis on the impact of fintech development on firms' cash dividend payments. In columns 1 and 2, the coefficients on *4G* are significantly positive, indicating that firms in a city are more likely to pay cash dividends when 4G services are available. The validity of a DID design rests on the assumption of parallel trends. In our context, the parallel trends assumption requires that the levels of dividend payments in the treatment and control groups follow a similar trend prior to the 4G implementation. To test this assumption, we include a set of pre-treatment dummy variables (*Pre3, Pre2, Pre1*) in columns 3 and 4 to indicate whether a city is scheduled to implement 4G three, two, or one year before the actual implementation, respectively. The insignificance coefficients of *Pre3*, *Pre2*, and *Pre1* suggest that there are no systematic differences in pre-treatment trends, supporting the validity of the parallel trends assumption.

4.2.2 Mismeasurement

We employ alternative proxies for cash dividend payments and fintech to address potential mismeasurement issues. First, we replace the dependent variable in equation 1 with an alternative proxy for cash dividend payments, namely *DividendPayer*, a dummy variable set to one if a firm pays dividends in a specific year and zero otherwise. As shown in table 7, the coefficient of *Fintech* remains significantly positive, indicating a consistent positive relationship between fintech and dividend payments across different dividend proxies. Second, we alter the independent variable in equation (1) to county-level fintech, measured by the logarithm of county-level aggregated PKU-DFIIC (*Fintech_county*). The county-level Digital Financial Inclusion Index is available from 2014, with significant data limitations before 2016, thereby constraining the number of observations. As shown in columns 2 and 3, the coefficient of *Fintech_county* is positive and significant, demonstrating that our results are robust under the alternative fintech measure.

[insert Table 7 here]

4.2.3 Excluding the data of direct-administered municipalities

One potential concern is that China's four direct-administered municipalities (Beijing, Tianjin, Shanghai, and Chongqing), which enjoy disproportionate central government support and superior financial infrastructure (Bai et al., 2024), may drive our estimated fintech effects. To ensure that these particular cities do not unduly influence our baseline results, we reestimated the main specifications after excluding all firms headquartered in these cities. Table 8 reports that the coefficient on *Fintech* remains positive and statistically significant, indicating that our finding holds even after excluding the direct-administered municipalities.

[insert Table 8 here]

5. Mechanism analysis

5.1 Fintech, financial constraint, and dividend payment

Our analysis reveals a robust positive effect of fintech development on firm cash dividend payments. In this section, we delve into the mechanisms driving this effect. As highlighted in the literature review, fintech has the potential to ease firms' external financial constraints by enhancing access to funding through credit and stock markets (Navaretti et al., 2018; Pérez-Martín et al., 2018; Murinde et al., 2022; Brogaard & Zareei, 2023). Moreover, fintech can reduce internal financial constraints by boosting operational efficiency and profitability (Bloom et al., 2014; Allen et al., 2021; Jiang et al., 2022). Given these insights, we empirically examine whether fintech facilitates dividend payments specifically by alleviating financial constraints.

We use three proxies to measure financial constraints. First, we measure financial constraints using the availability of credit ratings, which reflect access to external financial resources. We classify firms without credit ratings as constrained (Adam, 2009). *NonCredit* is a dummy variable that equals one if a firm lacks a credit rating and zero otherwise. Second, we use the high Kaplan-Zingales (KZ) index. We follow Guariglia and Yang (2016) and Ding et al. (2022) to calculate the KZ index as follows:

$$KZ_{i,t} = -1.002\frac{CF_{i,t}}{TA_{i,t-1}} + 0.283\,TQ_{i,t} + 3.139\frac{Debt_{i,t}}{TA_{i,t}} - 39.368\frac{DIV_{i,t}}{TA_{i,t-1}} - 1.315\frac{Cash_{i,t}}{TA_{i,t-1}} \quad (2)$$

where *CF* represents cash flow, *TA* stands for total assets, *TQ* denotes Tobin's Q, Debt is the total short-term debt, *DIV* means dividends, and Cash refers to cash and cash equivalents. A firm with a higher KZ index will likely experience greater financial constraints. Thus, *HighKZ* is a dummy variable that equals one if the KZ index is higher than the sample median, and zero otherwise.

Our third measurement is SME. Compared with large firms, SMEs find it more difficult to raise external funding (Hua & Huang, 2021). Thus, we use SME status to define financially constrained firms. *SME* is a dummy variable that equals one if a firm is an SME and zero otherwise, following the study of Deng and Zhang (2018). Table 9 presents the estimated results. In columns 1 and 2, the interaction term *Fintech* × *NonCredit* exhibits a significant positive coefficient, indicating that firms without a credit rating are more likely to benefit from fintech development to distribute dividends. Columns 3 to 6 show similar findings, where the coefficients of the interaction terms (*Fintech* × *HighKZ* and *Fintech* × *SME*) are significantly positive, suggesting that fintech development can alleviate financial difficulties for firms and thereby promote dividend payments.

[insert Table 9 here]

5.2 Fintech, governance, and dividend payment

Another plausible channel is that fintech enhances governance, thereby encouraging firms to pay dividends. Innovative technologies such as big data and blockchain can mitigate information asymmetry by providing investors with more comprehensive firm information and reducing information collection costs (Zhu, 2019). These technologies can enhance governance mechanisms by improving transparency and monitoring. As a result, if innovative technologies can facilitate governance, we can expect the relationship between fintech and dividend payout to be more pronounced for firms with weak governance. Empirically, we consider four individual governance indicators (board independence, board size, CEO duality, and institutional investor ownership) and create a corporate governance composite variable (CG) using principal component analysis (PCA).[1] *LowCG* is a dummy variable that equals one if CG is below the sample median, and zero otherwise.

The results are shown in table 10. The interaction term *Fintech* × *LowCG* has an insignificant coefficient, suggesting that there is no evidence supporting the idea that fintech enhances governance to promote dividend payments.[2] One possible explanation is that, although fintech can improve transparency, such technological measures may not be sufficient to alter corporate behavior in firms with severe governance deficiencies.

[insert Table 10 here]

6. Additional tests

6.1 Industry heterogeneity

In this section, we investigate the influence of fintech development on cash dividends across different types of industries. Following Yin and Sheng (2019), we adopt their classification of industries into capital-, labor-, and technology-intensive groups and generate three mutually exclusive dummy variables indicating whether a firm operates in a capital-intensive (*CapitalIntensive*), labor-intensive (*LaborIntensive*), or technology-intensive industry (*TechnologyIntensive*).[3]

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[1] Since CEO duality negatively impacts corporate governance, we invert this indicator so that higher values represent better corporate governance.

[2] We also test alternative governance measures, such as analyst coverage and media attention, and find similarly insignificant coefficients on interactions.

[3] The classification is based on SPSS cluster analysis using two industry-level indicators: (1) the proportion of fixed assets, measured as net fixed assets divided by average total assets; and (2) the R&D-to-payroll ratio, calculated as R&D expenditure divided by accrued payroll. The industry codes used in the classification are based on the "Guidelines of the China Securities Regulatory Commission (CSRC) on the Industry Classification of Listed Companies (2012)." Industries are then grouped into three mutually exclusive categories using Ward's linkage method, which seeks to minimize within-cluster variance. Based on the resulting clusters, those

As shown in columns 1 and 2 of table 11, the interaction term between capital-intensive industry and fintech development (*Fintech* × *CapitalIntensive*) is insignificant, indicating no significant effect on capital-intensive firms' cash dividend payout behavior. One explanation is that these firms already hold substantial tangible assets, which can be pledged as collateral to secure external financing at favorable rates (Booth & Booth, 2006; Rampini & Viswanathan, 2013). Fintech, while effective at alleviating financing constraints (Hau et al., 2018; Agarwal et al., 2020; Cornelli et al., 2023) has limited incremental benefits for capital-intensive firms that are already largely unconstrained, and thus, these firms do not exhibit a significant increase in cash dividend payouts.

We find a significant positive interaction between labor-intensive industry and the development of fintech (*Fintech* × *LaborIntensive*), as shown in columns 3 and 4. Unlike capital-intensive firms, firms in labor-intensive industries typically hold fewer tangible assets and face greater financing constraints (Fazzari et al., 1988b; Rajan & Zingales, 1995; Liu et al., 2021). When fintech innovation alleviates these constraints, firms are more likely to increase dividend payments.

Moreover, as shown in columns 5 and 6, the interaction between technology-intensive industries and fintech (*Fintech* × *TechnologyIntensive*) is negative and significant. This finding may be because firms in technology-intensive industries tend to spend available cash on innovation and expansion rather than paying dividends (Grullon et al., 2002; Hsu et al., 2016; Barros et al., 2023). Thus, although fintech improves access to finance, these firms prefer to reinvest rather than distribute it.

[insert Table 11 here]

6.2 Regional-level analysis

China is a vast country with significant economic, cultural, and social variations across different regions. These variations can exert a substantial influence on company behaviors and the adoption of new technologies. Therefore, we explore the effect of fintech on dividend payments in different regions, specifically comparing the central and western regions to the eastern regions, given the significant disparities in economic development across these areas. Following Li et al. (2024), we create a dummy variable, CW, which equals one if a firm is located in the central and western regions, and zero if it is located in the eastern regions.[4]

The results are shown in table 12. We find that the coefficient on *Fintech* × *CW* is significantly positive, suggesting that fintech is more effective in promoting firm dividend payments in the central and western regions. The central and western regions' economy is less developed than the eastern regions. Fintech increases financial inclusion and mitigates financing difficulties for firms in the central and western regions, thereby promoting cash dividend payments.

[insert Table 12 here]

7. Conclusion

This study investigates the association between fintech development and firm dividend policies, drawing on data from Chinese-listed firms from 2011 to 2022. The findings reveal that city-level fintech advancements enhance firm cash dividend distributions rather than stock dividends or share repurchases. Findings are robust under a series of tests, including the

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characterized by high capital intensity are labeled "*CapitalIntensive*," those with substantial R&D investment as "*TechnologyIntensive*," and the remaining industries as "*LaborIntensive*."

[4] The central and western regions include all provinces except Beijing, Liaoning, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, and Hainan. The classification of regions is based on the economic division standards released by the National Bureau of Statistics of China.

DID method, regional exclusions, and alternative measures. Mechanism analysis indicates that this effect primarily stems from fintech's ability to alleviate firms' financial constraints rather than strengthen external governance mechanisms. Further analysis finds that fintech development significantly increases cash dividend payouts for labor-intensive firms but has no significant effect on capital-intensive firms and an adverse effect on technology-intensive firms. These heterogeneous effects reflect differences in financing needs and cash usage preferences across industry types. Moreover, fintech's influence on cash dividend distributions is more pronounced in the central and western regions than in the eastern areas.

Our findings add to the growing body of research on the impact of fintech on real outcomes, such as that fintech enhances firm investment and innovation (Ding et al., 2022; Lin et al., 2022; Lin & Ma, 2022). Our study contributes to the dividend literature by introducing fintech as a novel determinant of cash dividend policy, complementing traditional explanations such as signaling (Bhattacharya, 1979; John & Williams, 1985; Miller & Rock, 1985; Garrett & Priestley, 2000), agency cost mitigation (Faccio et al., 2001; Ellahie & Kaplan, 2021), and regulation (Allen et al., 2005; Tao et al., 2022). Our findings strengthen theoretical understanding by showing that fintech-induced reductions in precautionary motives can lead to higher cash dividend payouts.

In the context of China's long-standing investor protection regulations, we find that fintech-driven financial inclusion promotes increased cash dividends. Fintechs have greatly eased financing constraints, making this effect particularly pronounced in the less economically developed central and western regions. These findings provide guidance to policymakers and regulators on how to increase corporate dividends and promote economic growth in resource-constrained regions by expanding digital financial inclusion.

A key limitation is our reliance on a city-level fintech index, which efficiently captures regional digital finance infrastructure and accessibility but may not reflect firm-level variation in actual fintech adoption. Future research could address this gap by incorporating firm-specific indicators, such as engagement in digital financing activities or partnerships with fintech platforms. In addition, further studies could enhance the generalizability of our findings by examining their applicability across different regulatory and market contexts, including both emerging and developed economies.

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Tables

Table 1: Summary statistics

	N	Mean	SD	Min	p25	Median	p75
Dividend/TA	25,410	0.013	0.019	0	0	0.007	0.018
Dividend/Sales	25,410	0.027	0.040	0	0	0.012	0.034
StockDividend	25,410	0.023	0.150	0	0	0	0
ShareRepurchase	25,410	0.142	0.349	0	0	0	0
Fintech	25,410	5.391	0.420	4.041	5.199	5.523	5.702
Size	25,410	22.478	1.315	19.986	21.553	22.297	23.242
Leverage	25,410	0.454	0.201	0.068	0.298	0.451	0.604
Cashflow	25,410	0.048	0.069	-0.155	0.009	0.047	0.088
FirmAge	25,410	2.960	0.322	1.946	2.773	2.996	3.178
SOE	25,410	0.427	0.495	0	0	0	1
ROA	25,410	0.055	0.064	-0.176	0.026	0.051	0.085
Growth	25,410	0.148	0.388	-0.562	-0.034	0.092	0.239
BM	25,410	0.656	0.256	0.119	0.464	0.662	0.850
FD	25,410	3.958	1.647	1.286	2.647	3.657	5.167
GDPgr	25,410	0.088	0.055	-0.114	0.056	0.090	0.117
Edu	25,410	0.026	0.011	0.010	0.019	0.024	0.033
CityInno	25,410	10.721	1.549	6.282	9.666	11.039	11.852

Notes: This table displays the summary statistics for variables used in the baseline regression analysis, including the number of observations, mean, standard deviation, 25th percentile, median, and 75th percentile. Detailed definitions of the variables can be found in Appendix A.

Table 2: Correlation matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)	Dividend/TA	1						
(2)	Dividend/Sales	0.797***	1					
(3)	StockDividend	0.048***	0.049***	1				
(4)	ShareRepurchase	0.106***	0.052***	-0.013**	1			
(5)	Fintech	0.047***	0.048***	-0.096***	0.230***	1		
(6)	Size	-0.034***	0.006	-0.001	0.057***	0.164***	1	
(7)	Leverage	-0.377***	-0.362***	-0.010*	-0.049***	-0.029***	0.471***	1
(8)	Cashflow	0.414***	0.281***	0.032***	0.067***	0.073***	0.066***	-0.179***
(9)	FirmAge	-0.096***	-0.055***	-0.026***	0.030***	0.420***	0.134***	0.127***
(10)	SOE	-0.153***	-0.077***	0.006	-0.213***	-0.101***	0.313***	0.237***
(11)	ROA	0.581***	0.442***	0.097***	0.069***	-0.071***	0.061***	-0.279***
(12)	Growth	0.046***	0.002	0.015**	0.017***	-0.032***	0.051***	0.040***
(13)	BM	-0.202***	-0.126***	-0.066***	-0.026***	0.019***	0.560***	0.360***
(14)	FD	-0.038***	-0.002	-0.027***	0.058***	0.353***	0.165***	0.073***
(15)	GDPgr	0.009	0.002	0.048***	-0.064***	-0.388***	-0.062***	0.019***
(16)	Edu	-0.021***	-0.024***	0.025***	-0.075***	-0.290***	-0.047***	0.012*
(17)	CityInno	0.043***	0.046***	-0.025***	0.129***	0.458***	0.103***	0.005

		(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(8)	Cashflow	1									
(9)	FirmAge	-0.003	1								
(10)	SOE	-0.020***	0.145***	1							
(11)	ROA	0.440***	-0.101***	-0.081***	1						
(12)	Growth	0.032***	-0.040***	-0.050***	0.276***	1					
(13)	BM	-0.102***	0.068***	0.225***	-0.169***	-0.038***	1				

(14)	FD	-0.030***	0.099***	0.111***	-0.057***	-0.026***	0.032***	1			
(15)	GDPgr	-0.050***	-0.184***	0.036***	0.077***	0.095***	-0.014**	-0.049***	1		
(16)	Edu	-0.019***	-0.150***	0.033***	0.023***	0.024***	0.003	-0.063***	0.161***	1	
(17)	CityInno	-0.005	0.100***	-0.048***	-0.019***	-0.020***	0.021***	0.584***	-0.026***	-0.170***	1

Notes: This table presents the Pearson correlation coefficients. *, **, and *** indicate 0.10, 0.05, and 0.01, respectively. Detailed definitions of the variables can be found in Appendix A.

Table 3: Baseline result - H1

VARIABLES	(1) Dividend/TA	(2) Dividend/Sales	(3) Dividend/TA	(4) Dividend/Sales
Fintech	**0.012***** **(0.003)**	**0.018***** **(0.007)**	**0.008***** **(0.003)**	**0.013**** **(0.006)**
Size			0.001*** (0.000)	0.004*** (0.001)
Leverage			-0.015*** (0.001)	-0.039*** (0.003)
Cashflow			0.022*** (0.002)	0.019*** (0.003)
FirmAge			-0.005** (0.002)	-0.016*** (0.005)
SOE			-0.001** (0.001)	-0.005*** (0.002)
ROA			0.081*** (0.003)	0.129*** (0.006)
Growth			-0.001*** (0.000)	-0.005*** (0.001)
BM			-0.003*** (0.001)	-0.002 (0.002)
FD			0.000 (0.000)	0.001 (0.001)
GDPgr			0.003 (0.002)	0.008* (0.004)
Edu			0.018 (0.019)	0.019 (0.046)
CityInno			-0.000 (0.000)	-0.001 (0.001)
Constant	-0.050*** (0.016)	-0.070* (0.036)	-0.030* (0.016)	-0.070* (0.038)
Observations	25,410	25,410	25,410	25,410
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.617	0.628	0.690	0.673

Notes: This table reports the baseline regression results examining the relationship between city-level fintech development and firm cash dividend payments. The dependent variables are the ratio of total cash dividends to total assets (*Dividend/TA*) and the ratio of total cash dividends to total sales (*Dividend/Sales*), reported in columns (1)–(4), respectively. The key explanatory variable is *Fintech*, measured as the natural logarithm of the city-level aggregate fintech index. Columns (3) and (4) additionally include firm-level controls, *Size*, *Leverage*, *Cashflow*, *FirmAge*, *SOE*, *ROA*, *Growth*, *BM*, and city-level controls such as *FD*, *GDPgr*, *Edu*, and *CityInno*. All regressions control for firm fixed effects and year fixed effects to account for unobserved firm heterogeneity and macroeconomic time trends. All continuous variables are winsorized at the 1st and 99th percentiles. The standard errors clustered at the firm level are displayed in parentheses. *, **, and *** indicate 0.10, 0.05, and 0.01, respectively. Detailed definitions of the variables can be found in Appendix A. The variables highlighted in bold are the ones we are interested in.

Table 4: Baseline result – H2

VARIABLES	(1) StockDividend	(2) ShareRepurchase
Fintech	**-0.001**	**-0.050**
	(0.036)	**(0.057)**
Constant	-0.068	-2.849***
	(0.213)	(0.385)
Observations	25,410	25,410
Controls	Yes	Yes
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Adj. R^2	0.103	0.300

Notes: This table presents the results of the impact of fintech on stock dividends and share repurchases. The standard errors clustered at the firm level are displayed in parentheses. *, **, and *** indicate 0.10, 0.05, and 0.01, respectively. Detailed definitions of the variables can be found in Appendix A. The variables highlighted in bold are the ones we are interested in.

Table 5: Robustness test – Future dividend payment

VARIABLES	(1) F. Dividend/TA	(2) F. Dividend/Sales
Fintech	**0.009*** **	**0.011***
	(0.003)	**(0.007)**
Constant	-0.022	-0.016
	(0.018)	(0.041)
Observations	21,831	21,831
Controls	Yes	Yes
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Adj. R^2	0.660	0.660

Notes: This table presents the results of the robustness test that changes the dependent variable to future periods, specifically future dividend payments. The standard errors clustered at the firm level are displayed in parentheses. *, **, and *** indicate 0.10, 0.05, and 0.01, respectively. Detailed definitions of the variables can be found in Appendix A. The variables highlighted in bold are the ones we are interested in.

Table 6: Robustness test – DID

VARIABLES	(1) Dividend/TA	(2) Dividend/Sales	(3) Dividend/TA	(4) Dividend/Sales
Pre3			**-0.001**	**-0.000**
			(0.001)	**(0.001)**
Pre2			**0.000**	**0.001**
			(0.001)	**(0.001)**
Pre1			**0.001**	**0.002**
			(0.001)	**(0.002)**
4G	**0.001*** **	**0.002***	**0.002*** **	**0.003***
	(0.000)	**(0.001)**	**(0.001)**	**(0.002)**
Constant	0.012	-0.006	0.010	-0.008
	(0.010)	(0.021)	(0.010)	(0.021)
Observations	25,410	25,410	25,410	25,410
Controls	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.690	0.673	0.690	0.673

Notes: This table presents the results of the robustness test using the DID method. The standard errors clustered at the firm level are displayed in parentheses. *, **, and *** indicate 0.10, 0.05, and 0.01, respectively. Detailed definitions of the variables can be found in Appendix A. The variables highlighted in bold are the ones we are interested in.

Table 7: Robustness test – alternative measures

VARIABLES	(1) DividendPayer	(2) Dividend/TA	(3) Dividend/Sales
Fintech	**0.157*** **		
	(0.080)		
FintechCounty		**0.010*** **	**0.015***
		(0.004)	**(0.008)**
Constant	-1.766***	-0.035	-0.108**
	(0.503)	(0.026)	(0.052)
Observations	25,410	15,350	15,350
Controls	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Adj. R^2	0.515	0.719	0.705

Notes: This table presents the results of the robustness test using alternative measures. The standard errors clustered at the firm level are displayed in parentheses. *, **, and *** indicate 0.10, 0.05, and 0.01, respectively. Detailed definitions of the variables can be found in Appendix A. The variables highlighted in bold are the ones we are interested in.

Table 8: Robustness test - exclude the data of direct-administered municipalities

VARIABLES	(1) Dividend/TA	(2) Dividend/Sales
Fintech	**0.006****	**0.009***
	(0.003)	**(0.005)**
Constant	-0.022	-0.048
	(0.018)	(0.030)
Observations	20,481	20,481
Controls	Yes	Yes
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Adj. R^2	0.689	0.668

Notes: This table presents the robustness test where we exclude the data of direct-administered municipalities to verify the stability of the main findings. The standard errors clustered at the firm level are displayed in parentheses. *, **, and *** indicate 0.10, 0.05, and 0.01, respectively. Detailed definitions of the variables can be found in Appendix A. The variables highlighted in bold are the ones we are interested in.

Table 9: Plausible mechanisms – financial constraints

VARIABLES	(1) Dividend/TA	(2) Dividend/Sales	(3) Dividend/TA	(4) Dividend/Sales	(5) Dividend/TA	(6) Dividend/Sales
Fintech	0.007***	0.009	0.006***	0.010	0.001	0.002
	(0.002)	(0.006)	(0.003)	(0.006)	(0.004)	(0.008)
NonCredit	-0.004*	-0.017**				
	(0.002)	(0.007)				
Fintech × NonCredit	**0.001****	**0.003****				
	(0.000)	**(0.001)**				
HighKZ			-0.014***	-0.023***		
			(0.003)	(0.007)		
Fintech × HighKZ			**0.002*****	**0.002***		
			(0.001)	**(0.001)**		
SME					-0.032**	-0.048**
					(0.017)	(0.025)
Fintech × SME					**0.008****	**0.011****
					(0.003)	**(0.005)**
Constant	-0.026**	-0.053	-0.021	-0.055	0.002	-0.022
	(0.012)	(0.038)	(0.016)	(0.038)	(0.023)	(0.045)
Observations	25,410	25,410	25,410	25,410	25,410	25,410
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.690	0.673	0.696	0.679	0.690	0.673

Notes: This table presents the results of the plausible mechanisms of the impact of fintech on dividend payments related to financial constraints. The standard errors clustered at the firm level are displayed in parentheses. *, **, and *** indicate 0.10, 0.05, and 0.01, respectively. Detailed definitions of the variables can be found in Appendix A. The variables highlighted in bold are the ones we are interested in.

Table 10: Plausible mechanisms – monitoring

VARIABLES	(1) Dividend/TA	(2) Dividend/Sales
Fintech	0.008***	0.013**
	(0.003)	(0.007)
LowCG	**0.002**	**0.010**
	(0.003)	**(0.007)**
Fintech × LowCG	**-0.000**	**-0.002**
	(0.000)	**(0.001)**
Constant	-0.031*	-0.075*
	(0.016)	(0.038)
Observations	25,385	25,385
Controls	Yes	Yes
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Adj. R^2	0.690	0.674

Notes: This table presents the results of the plausible mechanisms of the impact of fintech on dividend payments related to monitoring. The standard errors clustered at the firm level are displayed in parentheses. *, **, and *** indicate 0.10, 0.05, and 0.01, respectively. Detailed definitions of the variables can be found in Appendix A. The variables highlighted in bold are the ones we are interested in.

Table 11: Additional test – industry heterogeneity

VARIABLES	(1) Dividend /TA	(2) Dividend/ Sales	(3) Dividend /TA	(4) Dividend/ Sales	(5) Dividend /TA	(6) Dividend/ Sales
Fintech	0.008***	0.012*	0.008***	0.012*	0.009***	0.014**
	(0.003)	(0.006)	(0.003)	(0.006)	(0.003)	(0.006)
CapitalIntensive	-0.003	-0.002				
	(0.003)	(0.007)				
Fintech × CapitalIntensive	**0.001**	**0.001**				
	(0.001)	**(0.001)**				
LaborIntensive			-0.005*	-0.018***		
			(0.003)	(0.006)		
Fintech × LaborIntensive			**0.001***	**0.004*****		
			(0.001)	**(0.001)**		
TechnologyIntensive					0.008***	0.021***
					(0.003)	(0.006)
Fintech × TechnologyIntensive					**-0.001****	**-0.004*****
					(0.001)	**(0.001)**
Constant	-0.029*	-0.069*	-0.030*	-0.072*	-0.035**	-0.083**
	(0.016)	(0.038)	(0.016)	(0.038)	(0.016)	(0.038)
Observations	25,410	25,410	25,410	25,410	25,410	25,410
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.690	0.673	0.690	0.674	0.690	0.674

Table 12: Additional test – regional-level analysis

VARIABLES	(1) Dividend/TA	(2) Dividend/Sales
Fintech	0.004	0.007
	(0.003)	(0.005)
CW	-0.011***	-0.017***
	(0.003)	(0.006)
Fintech × CW	**0.002*** **	**0.002** **
	(0.001)	**(0.001)**
Constant	-0.007	-0.036
	(0.017)	(0.030)
Observations	25,410	25,410
Controls	Yes	Yes
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Adj. R^2	0.690	0.673

Notes: This table presents the results of the effect of different regions on the impact of fintech on dividend payments. The standard errors clustered at the firm level are displayed in parentheses. *, **, and *** indicate 0.10, 0.05, and 0.01, respectively. Detailed definitions of the variables can be found in Appendix A. The variables highlighted in bold are the ones we are interested in.

Appendix A - Variable definition:

Dividend/TA: Total cash dividends divided by total assets.
Dividend/Sales: Total cash dividends divided by total sales.
StockDividend: A dummy variable that equals one if the firm announced a stock dividend plan, and zero otherwise.
ShareRepurchase: A dummy variable that equals one if the firm implemented a share repurchase decision, and zero otherwise.
Fintech: The logarithm of the city-level aggregate fintech index.
Size: The natural logarithm of total assets.
Leverage: The total debt divided by total assets.
Cashflow: Operating cash flow divided by total sales.
FirmAge: The natural logarithm of firm age.
SOE: A dummy variable which equals one if the firm is a state-owned enterprise (SOE), and zero otherwise.
ROA: Earnings before interest and tax divided by total assets.
Growth: The increased percentage of sales revenue from the previous year.
BM: Book value of equity divided by market value of equity.
FD: The amount of loans and deposits of a city divided by GDP.
GDPgr: GDP growth of the city.
Edu: The ratio of high school students to the total population.
CityInno: The natural logarithm of 1 plus the total number of patents per capita.
4G: A dummy variable equals one when Shanghai, Hangzhou, Nanjing, Guangzhou, Shenzhen, and Xiamen have implemented 4G since 2013; Beijing, Qingdao, Wenzhou, Tianjin, Shenyang, Chengdu, and Fuzhou have implemented 4G since 2014; and the rest of the cities have implemented 4G since 2015. It equals zero before the implementation of 4G.
Pre3: A dummy variable that equals one for a given year if it is three years before the 4G implementation in the city where the firm is located, and zero otherwise.
Pre2: A dummy variable that equals one for a given year if it is two years before the 4G implementation in the city where the firm is located, and zero otherwise.
Pre1: A dummy variable that equals one for a given year if it is one year before the 4G implementation in the city where the firm is located, and zero otherwise.
DividendPayer: A dummy variable that equals one if a firm pays out dividends, and zero otherwise.
FintechCounty: The logarithm of the county-level aggregate fintech index.
NonCredit: A dummy variable that equals one if a firm lacks a credit rating, and zero otherwise.
HighKZ: A dummy variable that equals one if KZ index is higher than the sample median and zero otherwise.
SME: A dummy variable that equals one if a firm is an SME and zero otherwise. Following Deng and Zhang (2018), we define Chinese SMEs as firms that employ up to 2,000 employees in a variety of industries, including information technology, food, textiles, garments, chemicals, plastics, nonmetallic mineral products, basic metals, fabricated metal products, machinery and equipment, electronics, motor vehicles, and other manufacturing sectors. In the construction, motor vehicle services, and transport industries, SMEs are defined as firms with up to 3,000 employees. The retail and wholesale industries define SMEs as having a maximum of 500 and 200 employees, respectively. In the restaurant and hotel industry, SMEs are defined as firms with up to 800 employees.
LowCG: A dummy variable that equals one if CG is below the sample median, and zero otherwise.

CapitalIntensive: A dummy variable that equals one if the industry is classified as capital-intensive (characterised by high capital intensity), and zero otherwise. *TechnologyIntensive*: A dummy variable that equals one if the industry is classified as technology-intensive (characterised by substantial R&D investment), and zero otherwise.
LaborIntensive: A dummy variable that equals one if the industry is classified as labour-intensive (the remaining industries), and zero otherwise.
CW: A dummy variable equals one if a firm is located in the central and western regions, and zero otherwise. The central and western regions include all provinces except Beijing, Liaoning, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, and Hainan.