

Research on the impact of a deliberate integer cash dividend policy on the stock price crash risk of manufacturing enterprises

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Abstract

Purpose – Against the backdrop of China's semi-mandatory dividend policy and integer dividend clustering, this study examines how deliberate integer cash dividends affect the stock price crash risk of Chinese manufacturing firms and identifies the transmission mechanisms, addressing the gap in research on the economic consequences of irrational dividend decisions.

Theoretical framework – Grounded in salient number theory, dividend catering theory, signaling theory, and information asymmetry theory, the study constructs a dual-path logical framework that links irrational integer dividend behavior to elevated crash risk through the dimensions of the information environment and investment efficiency.

Design/methodology/approach – Using 12,476 firm-year observations of Chinese manufacturing firms listed on the stock exchange from 2014 to 2024, the study employs fixed-effects and mediation models. Robustness is checked via sensitivity analysis, high-dimensional fixed effects, and bootstrap sampling.

Findings – Deliberate integer cash dividends significantly increase the crash risk of manufacturing firms. This irrational dividend policy increases crash risk through two partial mediating paths: it exacerbates information asymmetry between firms and external investors and distorts capital allocation, leading to inefficient investment. The effect is stronger for firms in the eastern region, firms without bank-enterprise ties, and non-SOEs.

Practical & social implications of the research – Theoretically, it expands the literature on dividend policy outcomes and crash risk drivers. In practice, it provides manufacturing firms with an immediate reference for optimizing dividend formulation and avoiding extreme downside risks. It also offers an empirical basis for regulators to improve dividend disclosure rules, rectify dividend distortions, and guide rational dividend distribution. This stabilizes markets and supports growth in the real economy.

Originality/value – This study goes beyond the traditional focus on dividend payout ratio clustering to systematically investigate overlooked integer clustering in absolute cash dividends in China's market. It also verifies dual mediating mechanisms, filling research gaps on the risk effects of corporate irrational dividend decisions.

Keywords: Deliberate integer cash dividend, stock price crash risk, information asymmetry, inefficient investment, manufacturing enterprises.

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1 Introduction

Cash dividend distribution is a core component of financial decision-making for listed firms and a key topic in capital market research. Against the backdrop of successive rounds of semi-mandatory dividend policies implemented in China, the long-standing problem of widespread zero or minimal dividend payouts among A-share listed firms has been significantly improved. However, a new distortion has emerged in dividend decision-making. When formulating cash dividend plans, many listed firms do not calculate an optimal dividend amount based on their profitability, cash flow, and long-term capital expenditure demands. Instead, they deliberately set the cash dividend amount per ten shares to an integer, exhibiting “deliberate integer cash dividend” behavior that deviates from their fundamentals. This phenomenon is particularly prevalent among manufacturing enterprises. According to their 2024 annual reports, more than 30% of manufacturing companies listed on the Shanghai and Shenzhen Main Boards announced integer cash dividends. This behavior, driven by managers’ bounded rationality or market-catering incentives, may deviate from firms’ operating fundamentals. Whether it will distort resource allocation, exacerbate information asymmetry, and ultimately lead to an extreme stock price crash is a practical issue on which the industry and regulators should focus. It is also a key topic that has not been systematically addressed in existing academic research.

Previously, it was commonly held by practitioners and some scholars in China that dividend clustering is a distinctive feature specific to China’s dividend policy. However, this argument is biased. Studies of developed markets have also examined this phenomenon thoroughly and identified market competition as a core driving factor (Adhikari & Agrawal, 2018; Grennan, 2019). As the semi-mandatory dividend policy is gradually implemented and improved, the peer effect of cash dividends in China’s stock market has received increasing attention. Relevant discussions have focused on the clustering of dividend payment levels at the industry and regional levels. Cave and Lancheros (2024) suggested that this phenomenon stems from imitative learning and competitive imitation among enterprises. However, these studies have focused on the relative level of the dividend payout ratio and have mostly used the industry’s average dividend from the previous year as the “imitated target.” They fail to explain

the initial source of dividend clustering and ignore the integer clustering phenomenon in cash dividend amounts.

From the perspective of connotation and extension of concepts, dividend clustering, lazy dividends, and deliberate integer cash dividends are connected yet have clear boundaries. Dividend clustering is the broadest concept and describes the phenomenon of corporate payout levels concentrating in a specific numerical range. In existing studies, dividend clustering is a general term that predominantly refers to the clustering of relative payout ratios driven by peer effects. However, the numerical clustering of absolute dividend amounts examined in this paper has received little scholarly attention. Lazy dividends (Dennis & Weston, 2025) refer to managers choosing salient numbers that deviate from firm fundamentals as dividend levels to simplify decision-making and avoid complex calculations. This is a specific type of irrational dividend decision-making and one of the micro causes of dividend clustering. Deliberate integer cash dividends, the core research object of this paper, are a typical manifestation of lazy dividends in China’s market. Specifically, it refers to firms setting the cash dividend per ten shares as an integer, which is a form of absolute dividend amount clustering. This behavior is motivated not only by managers’ decision inertia but also by the market catering to local investors’ preference for integers.

Although existing studies have long focused on the clustering of relative dividend payout ratios, they cannot explain the concentration of absolute dividend amounts in integers. This integer clustering is essentially a product of managers’ irrational decision-making and is particularly prominent in China’s institutional and cultural context of a semi-mandatory dividend policy and investors’ preference for integer amounts. However, the risks associated with this phenomenon have not yet been thoroughly examined. Therefore, this paper begins with the general phenomenon of dividend clustering and focuses on the specific, overlooked anomaly of deliberate integer cash dividends to explore their risk effects.

In fact, a certain degree of clustering exists in the amount of cash dividends (Jakob & Nam, 2019), a phenomenon that has been overlooked by existing research and that conflicts with the research logic of dividend payout ratio clustering. There are significant individual differences in earnings per share and distributable profits among enterprises. The peer effect of the dividend payout ratio cannot explain why a large number of firms choose to pay integer cash dividends.

The most likely underlying cause is managers' irrational decision-making for market catering purposes or simple "decision laziness" (Dennis & Weston, 2025). Such decisions, which deviate from firms' actual operating conditions and cash flow fundamentals, may trigger inefficient investment by crowding out necessary corporate investment and exacerbate information asymmetry between firms and the market. These two factors are the core incentives for stock price crash risk formation. This paper focuses on this long-overlooked anomaly in dividend decision-making and systematically examines the impact of a deliberate integer cash dividend policy on the stock price crash risk of manufacturing enterprises. It also reveals the dual transmission mechanisms of information asymmetry and inefficient investment behind it.

Manufacturing enterprises are the core of the real economy. Their capacity upgrades, research and development (R&D), and innovations depend heavily on sustainable capital input. However, the rigid cash outflow from deliberate integer cash dividends may directly crowd out such necessary investments. Meanwhile, manufacturing enterprises have complex supply chain relationships and internal management links, resulting in relatively low information transparency. Irrational decisions regarding deliberate integer cash dividends may further amplify the information asymmetry between enterprises and the market, creating a greater risk than in other industries. This study provides theoretical support for manufacturing enterprises to optimize dividend decisions, prevent stock price crashes, improve the quality and efficiency of the real economy, and provide empirical references for regulators to guide listed firms in distributing dividends rationally. This approach is highly consistent with the strategic orientation of the macro industry and the practical needs of real economic development.

The marginal contributions of this paper are reflected primarily in two aspects. First, it overcomes the limitations of existing research that has long focused on the clustering of dividend payout ratios. It systematically examines the overlooked anomaly of integer clustering in cash dividend amounts in China's stock market and empirically tests the impact of irrational decision-making that deviates from firm fundamentals on stock price crash risk. In doing so, it fills an academic gap in the field of the economic consequences of dividend policy. Second, the paper constructs a dual mediating mechanism of information asymmetry and inefficient investment. It reveals the internal path through which a deliberate integer cash dividend policy drives up stock price crash risk.

The paper enriches relevant research on the factors that influence stock price crash risk and provides a new perspective on the risk effects of the irrational financial decisions of listed firms.

The remainder of this paper proceeds as follows: Section 2 develops the theoretical logic and proposes three research hypotheses based on relevant theories and literature. The section clarifies the dual transmission paths of information asymmetry and inefficient investment. Section 3 describes the sample selection, variable measurement, and empirical model specifications. Section 4 reports the baseline regression results, mediation mechanism tests, endogeneity treatments, robustness checks, and heterogeneity analysis. Section 5 summarizes the core findings, presents targeted implications for firms and regulators, and discusses the limitations and future research directions of this study.

2 Theoretical analysis and research hypotheses

2.1 Deliberate cash dividends and stock price crash risk

Special numbers have inherent salience in economic decision-making. Albers and Albers (1983) first defined salient numbers as those in the form of $\alpha 10^i$ (where $\alpha \in \{1, 2, 5\}$). They argued that these numbers conform to human cognitive inertia and are widely used in various economic scenarios. One example is the special-digit pricing of convenience store products, or the "convenient prices" defined by Knotek (2008). These special numbers simplify cognitive and operational costs in transactions by using rounded numbers. In corporate cash dividend decision-making, choosing dividends in these special amounts is an important extension of salient numbers in corporate finance. The concept has been preliminarily verified in developed capitalist markets. Converse and Dennis (2018) found that decision-makers tend to choose salient numbers based on conventional cognition, especially when time and ability are limited. They avoid the costs of complex cognitive processing by choosing such numbers. This is also an application extension of traditional bounded rationality theory. Dennis and Weston (2025) defined dividend decisions not supported by financial performance as "lazy dividends" and confirmed they are an important indicator of poor corporate governance. These policies are often associated with negative economic consequences, such as poor operating performance and abnormal returns.

The dividend rounding behavior discussed in this paper is a pressing issue in China's capital market that needs to be addressed.

The dual cognitive biases of internal managers and external investors amplify the potential risks of an integer dividend policy. According to the mental accounting theory (Shefrin & Statman, 1994), investors treat cash dividends and capital gains as separate entities and are more sensitive to changes in cash dividends. Canceling or significantly adjusting dividends may trigger a strong negative reaction. Therefore, managers tend to maintain dividend stability or cater to investors' psychological expectations to avoid risks to their careers and reputations. Influenced by traditional Chinese culture, investors prefer "perfect" integer dividends, providing an external basis for cash dividend rounding behavior.

In manufacturing enterprises, fierce market competition intensifies herd decision-making among managers (Hirshleifer & Teoh, 2003). Imitating the integer dividend behavior of peer firms disperses decision-making responsibility and alleviates pressure on individual managers, even if the result is poor. However, such decision-making, based on psychological preferences rather than fundamentals, leads to a disconnect between dividend policy and the real earnings and cash flow of enterprises. In addition, Chinese investors pay insufficient attention to dividends (Shu & Tan, 2022), further promoting such irrational managerial decision-making and leading to subsequent risk accumulation.

Signaling theory and catering theory provide a theoretical basis for understanding the subsequent accumulation of risk caused by a deliberate integer cash dividend policy. According to signaling theory, cash dividends are an important means of conveying corporate earnings information to the outside world (Miller & Rock, 1985). However, studies such as that of Tao et al. (2016) have pointed out the limited applicability of this theory in China's capital market. This is because the dividend policies of most Chinese listed firms lack continuity and consistency, and dividend changes are not significantly correlated with actual earnings. Dividend payouts driven by the semi-mandatory dividend policy are mainly to cater to regulation rather than convey performance signals. Together with catering theory, the formation of deliberate integer cash dividend behavior and its possible economic consequences become clearer. For example, the study by Hou et al. (2025) has confirmed that Chinese listed firms'

dividend policies exhibit obvious catering characteristics. Managers adjust these policies according to investors' irrational preferences for cash dividends. The empirical results of Kumar et al. (2022) show that cash dividend catering behavior is significantly correlated with firms' abnormal accruals. This reduces the information content of stock prices, leading to the long-term accumulation of negative news.

Although dividend catering pushes up stock prices in the short term, it triggers a stock price reversal in the long term due to the decline in financial information quality and significantly exacerbates crash risk. Increasingly fierce market competition also strengthens the clustering of deliberate integer cash dividends. Duong et al. (2015) pointed out that, in a competitive market, imitating peer firms' dividend policies helps enterprises gain value recognition close to the market average. Therefore, managers follow the trend of choosing integer dividends to maintain market recognition. This competitive imitation further amplifies the irrationality of dividend policy and ultimately increases the risk of a stock price crash.

To clarify the logical role of each theory in the causal chain, Figure 1 outlines the following sequence. First, salient number theory and bounded rationality jointly account for managers' cognitive inclination toward integer dividends. Second, catering theory and mental accounting theory explain why firms face market incentives to accommodate investors' preference for integers. Third, herding theory illuminates the peeramplification effect in integer dividend decisions. Finally, the weakened signaling effect captures the consequences of information distortion when dividends deviate from fundamental values.

Based on the above analysis, this paper proposes the following hypothesis:

H₁: A deliberate integer cash dividend policy amplifies the stock price crash risk of manufacturing enterprises.

2.2 The mediating role of information asymmetry

The dispersion of analysts' earnings forecasts is a widely recognized proxy for information asymmetry in capital market research. Barron et al. (1998) demonstrate that this dispersion stems from idiosyncratic information noise and uncertainty in the corporate information environment.

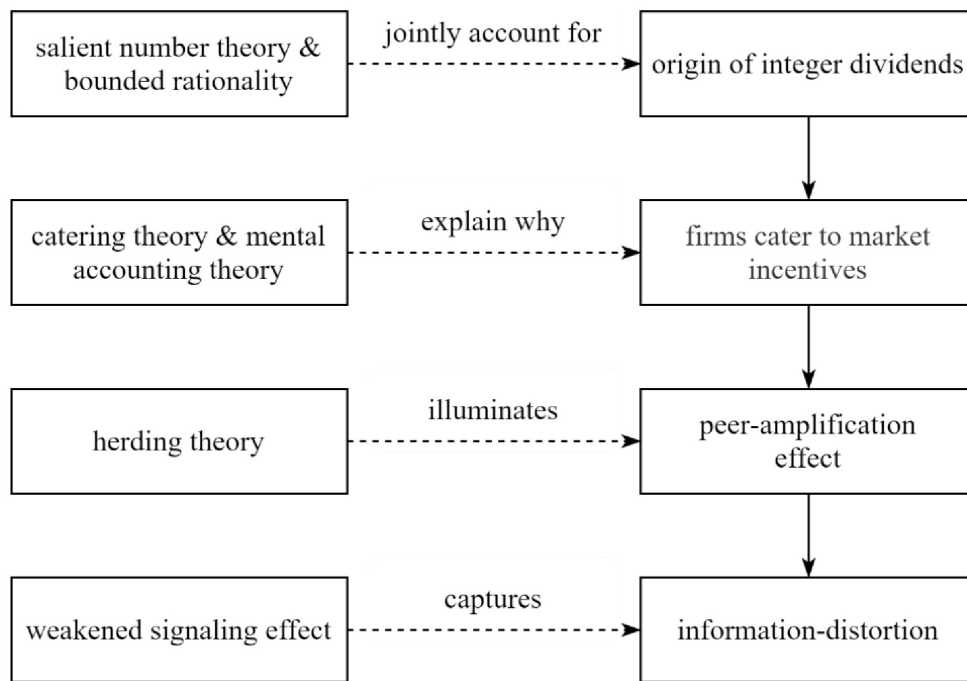


Figure 1. A theoretical framework of the causal chain underlying integer dividend behavior

When corporate information transparency is low and information asymmetry is severe, analysts rely more on private information, which leads to greater divergence in forecast results. Eliwa et al. (2021) further verify that higher earnings quality leads to more analysts following the trend, less dispersion of analysts' forecasts, and more accurate forecasts, confirming the validity of using this indicator to measure the degree of information asymmetry between firms and external investors.

To a certain extent, a deliberate integer cash dividend policy that is not aligned with corporate earnings and cash flow exacerbates the information asymmetry between enterprises and external investors. In terms of managerial decision-making, when information acquisition costs are high or information is noisy, managers are more likely to imitate the behavior of peer firms (Banerjee, 1992). On the other hand, studies have found a significant peer effect in the cash dividend policies of listed firms due to their social networks (Leary & Roberts, 2014; Qin et al., 2022). Firms with higher network centrality exhibit less divergence in dividend behavior from their peers. This imitative behavior makes it difficult for external investors to determine if dividend decisions are based on fundamentals or blind herding, which increases the difficulty of interpreting information. The confusion between the correlation effect and the peer effect will further increase the degree of information asymmetry (Manski, 1993).

Investors cannot accurately judge whether deliberate integer cash dividends are similar behavior caused by industry characteristics or irrational decision-making by individual enterprises.

The catering behavior of deliberate integer cash dividends exacerbates information asymmetry through the real earnings management of enterprises. Cash dividend catering behavior significantly promotes earnings management, especially in enterprises with abundant free cash flow and high asset liquidity (Baker et al., 2009). This earnings management involves managers' subjective manipulation to support the superficial rationality of integer dividends. Consequently, the financial information disclosed by enterprises will deviate from their real operating conditions.

The decline in the quality of financial information caused by dividend catering behavior hinders the market's ability to detect negative enterprise news in a timely manner. After long-term accumulation, concentrated exposure to negative news can trigger a stock price crash (Hutton et al., 2009; Kim et al., 2011). The information advantage gap between state-owned enterprises (SOEs) and non-state-owned enterprises (non-SOEs) amplifies this effect. Non-SOEs are more likely to take imitative actions, which makes external investors more uncertain about the rationality of dividend policies and exacerbates information asymmetry (Wong, 2016).

The hoarding and accumulation of negative information caused by information asymmetry will eventually increase the risk of a stock price crash. Hirshleifer and Teoh (2003) pointed out that information opacity allows managers to hide negative news. One important cause of a stock price crash is the sudden release of a large amount of negative news.

Among manufacturing enterprises, it is more difficult for external investors to accurately assess real operating conditions due to objective factors such as long supply chains and more professional investment projects. Information asymmetry caused by a deliberate integer cash dividend policy further amplifies this disadvantage, making it impossible for investors to identify financial risks in a timely manner. When subsequent negative news is exposed, herd behaviors such as concentrated selling occur, exacerbating the risk of a stock price crash. Based on the above analysis, this paper proposes the following hypothesis:

H₂: Information asymmetry plays a mediating role in the relationship between a deliberate integer cash dividend policy and the stock price crash risk of manufacturing enterprises.

2.3 The mediating role of inefficient investment

There is a direct correlation between a company's cash dividend policy and its subsequent investment policy. Studies by Brav et al. (2005) and Farre-Mensa et al. (2014) have shown that the level of corporate dividend payments directly affects the amount of funds available for investment. Deliberate integer cash dividends have stronger rigid characteristics, which significantly distort the investment decisions of manufacturing enterprises and lead to serious investment inefficiency.

Due to their capital-intensive nature, the daily activities of manufacturing enterprises, such as equipment renewal, R&D, innovation, and transformation and upgrading, require continuous capital investment. Enterprises with weak profitability and those in the growth stage need a larger scale of retained earnings to meet future demand. However, excessive dividend payments will crowd out the necessary investment funds. The rigid expenditure of upward rounding of cash dividends may lead to underinvestment, which will weaken enterprises' competitiveness in the long run and affect stock market performance. On the other hand, a deliberate integer cash dividend policy may also lead to overinvestment.

Studies have found that the peer effect of cash dividends is stronger in firms with overconfident managers when investment opportunities are low. Such peer-influenced dividend policies adversely impact future operating performance (Deshmukh et al., 2013). Dennis and Weston's (2025) research proves that firms implementing "lazy dividends" have worse operating performance. One important reason is the resource misallocation caused by inefficient investment.

Inefficient investment increases the risk of a stock price crash by deteriorating corporate fundamentals. The adverse impact of inappropriate dividend policies on the future operations and development of enterprises has also been confirmed (Dennis & Weston, 2025). Underinvestment leads to outdated production capacity and slow technological advancements in manufacturing enterprises, reducing their market competitiveness and profitability. Conversely, overinvestment causes idle resources, asset mismatch, and increased financial burdens. Both types of investment distortion will aggravate the deterioration of corporate fundamentals and increase stock price risk. The financial risks and inefficient investment caused by dividend catering accumulate over time and are finally released in the form of a stock price crash. In manufacturing enterprises, the rationality of investment decisions directly affects survival and development, and the negative impact of inefficient investment is more apparent than in other industries. Therefore, the mediating effect between a deliberate integer cash dividend policy and stock price crash risk may be more significant.

It should be noted that the degree of inefficient investment caused by rigid dividend expenditures is constrained by corporate financing availability. Firms with strong financing capabilities and close bank-enterprise relationships can alleviate the crowding-out effect of dividend payouts on funds for investment through external financing, thus weakening the degree of investment distortion. This conditioning factor will be tested further in the heterogeneity analysis section.

Based on the above analysis, this paper proposes the following hypothesis:

H₃: Inefficient investment plays a mediating role in the relationship between a deliberate integer cash dividend policy and the stock price crash risk of manufacturing enterprises.

3 Research design

3.1 Sample selection and data sources

On November 30, 2013, the China Securities Regulatory Commission (CSRC) issued Announcement No. 34. This announcement further standardized the distribution of cash dividends by listed companies and increased the transparency of these dividends. Based on this announcement, this paper uses listed manufacturing enterprises on the Main Boards of the Shanghai and Shenzhen Stock Exchanges from 2014 to 2024 as the initial sample. We excluded ST and *ST firm-year observations, as well as samples with missing key data related to the research. Ultimately, we obtained an unbalanced panel dataset containing 12,476 valid firm-year observations. The main data for this study come from the CSMAR Database (Supplementary Data 1 – Dataset; Supplementary Data 2 – Codebook). All continuous variables are winsorized at the 1% and 99% levels to mitigate the impact of outliers.

3.2 Variable measurement

Based on the research topic of this paper and the relevant existing literature, the specific settings of each variable are as follows:

- (1) Explained Variable. Stock price crash risk (*NCSKEW*), measured by the crash risk of stock prices using the weighted average method of the comprehensive market circulating market value. A larger value indicates a higher probability of an extreme slump in individual stock prices and greater crash risk.
- (2) Explanatory Variable. The deliberate integer cash dividend dummy variable (*Integer*), which is assigned according to whether the cash dividend per ten shares in the previous fiscal year is an integer. It equals 1 if the cash dividend per ten shares is an integer and 0 otherwise.
- (3) Mediating Variables. (i) Information asymmetry (*Asymmetry*): Following the practices of Barron et al. (1998) and Eliwa et al. (2021), it is measured by the dispersion of analysts' earnings forecasts for individual stocks. The greater the divergence in professional analysts' evaluations, the more serious the information asymmetry problem.

(ii) Inefficient investment (*Insufficient*): Measured by the absolute value of residuals calculated based on the Biddle investment efficiency model.

- (4) Control Variables. Based on existing research, we selected the following control variables: firm size (*Size*), asset-liability ratio (*Lev*), return on assets (*ROA*), book-to-market ratio (*BM*), average return (*Ret*), return volatility (*Sigma*), excess turnover rate (*Turnover*), accounting information quality (*Abace*), and firm age (*Age*). Meanwhile, we control for year, province, and industry fixed effects. The specific definitions of the variables are shown in Table 1.

3.3 Model construction

To test the adverse impact of a deliberate integer cash dividend policy on the stock price crash risk of manufacturing enterprises, we constructed the following Model 1:

$$NCSKEW_{i,t} = \alpha_0 + \alpha_1 Integer_{i,t} + \alpha_2 Controls_{i,t} + \Sigma Year + \Sigma Industry + \Sigma Province + \varepsilon_{i,t} \quad (1)$$

Furthermore, to test the mediating role of information asymmetry and inefficient investment in the process by which a deliberate integer cash dividend policy affects the stock price crash risk of manufacturing enterprises, we constructed Models 2 and Model 3 to test the mediation effect, where *M* denotes the unified mediating variable corresponding to information asymmetry (*Asymmetry*) and inefficient investment (*Insufficient*), respectively.

$$M_{i,t} = \beta_0 + \beta_1 Integer_{i,t} + \beta_2 Controls_{i,t} + \Sigma Year + \Sigma Industry + \Sigma Province + \varepsilon_{i,t} \quad (2)$$

$$NCSKEW_{i,t} = \gamma_0 + \gamma_1 M_{i,t} + \gamma_2 Integer_{i,t} + \Sigma Year + \Sigma Industry + \Sigma Province + \varepsilon_{i,t} \quad (3)$$

4 Empirical analysis

4.1 Descriptive statistics and correlation analysis

All analyses were conducted in Stata (Supplementary Data 3 – Stata Script). The descriptive statistics of each

Table 1.
Variable definitions

Variable Type	Variable Symbol	Variable Name	Variable Definition
Explained Variable	<i>NCSKEW</i>	Stock Price Crash Risk	Stock price crash risk calculated using the weighted average method of comprehensive market circulating market value
Explanatory Variable	<i>Integer</i>	Deliberate Integer Cash Dividend	Dummy variable that equals 1 if the cash dividend per ten shares in the previous fiscal year is an integer and 0 otherwise
Mediating Variables	<i>Asymmetry</i>	Information Asymmetry	Dispersion of analysts' earnings per share forecasts for individual stocks
	<i>Insufficient</i>	Inefficient Investment	Absolute value of residuals calculated based on the Biddle investment efficiency model
Control Variables	<i>Size</i>	Firm Size	Natural logarithm of the enterprise's total assets
	<i>Lev</i>	Asset-Liability Ratio	Total liabilities ÷ total assets of the enterprise
	<i>ROA</i>	Return on Assets	Net profit ÷ total assets of the enterprise
	<i>BM</i>	Book-to-Market Ratio	Book value of equity ÷ market value of the enterprise
	<i>Ret</i>	Average Return	Annual average of weekly individual stock returns
	<i>Sigma</i>	Return Volatility	Annual standard deviation of weekly individual stock returns
	<i>Turnover</i>	Excess Turnover Rate	Difference between monthly average turnover rate and that of the previous period
	<i>Abace</i>	Accounting Information Quality	Absolute value of discretionary accruals calculated based on the modified Jones model
	<i>Age</i>	Firm Age	Natural logarithm of (listing year + 1)
	<i>Year</i>	Year Fixed Effects	
Fixed Effects	<i>Province</i>	Province Fixed Effects	
	<i>Industry</i>	Industry Fixed Effects	

variable are shown in Table 2. The mean and median values of the explained variables are -0.3013 and -0.2601, respectively, indicating that the overall extreme future stock price risk of the sample enterprises is relatively low. About a quarter of the sample enterprises adopted dividend rounding behavior, indicating that this study has obvious practical significance. Regarding the mediating variables, information asymmetry, as measured by analysts' forecast divergence, is generally low. This is related to gradually improved disclosure policies and enhanced information acquisition abilities of external investors in recent years. However, after excluding enterprises with insufficient analyst attention, overall information asymmetry increased by 71.64% (the mean value rose from 0.0067 to 0.0115). The overall investment efficiency of the sample enterprises is relatively high, though some enterprises exhibit serious investment distortion. The sample size of *Insufficient* is 12,394. This minor sample loss stems from two sources:

missing values of key variables involved in the Biddle model and perfect collinearity in the fixed-effects regression. The total sample loss accounts for only about 0.66%, far below the generally acceptable threshold in empirical studies, and will not lead to sample selection bias. This minor sample loss does not affect the estimation of the main effect or the other mediation path, nor does it have a significant impact on the reliability of the inefficient investment mediation effect test.

According to the results of the correlation analysis between the variables, the vast majority of the correlation coefficients in the model are less than 0.2. The VIF test shows that the maximum VIF value is only 2.31, and the average VIF value is only 1.50, indicating that there is no significant multicollinearity among the variables of the overall model. Due to space limitations, the detailed correlation results table is not presented.

Table 2.
Descriptive statistics of variables

	N	Mean	Median	SD	Min	Max
<i>NCSKEW</i>	12476	-0.3013	-0.2601	0.7173	-2.4531	1.7552
<i>Integer</i>	12476	0.2457	0.0000	0.4305	0	1
<i>Asymmetry</i>	12476	0.0067	0.0025	0.0116	0	0.0686
<i>Insufficient</i>	12394	0.0388	0.0246	0.0459	0.0004	0.2759
<i>Size</i>	12476	22.5008	22.3603	1.1796	20.1971	25.9712
<i>Lev</i>	12476	0.4101	0.4091	0.1750	0.0707	0.8088
<i>ROA</i>	12476	0.0507	0.0421	0.0514	-0.0933	0.2255
<i>BM</i>	12476	0.3473	0.3260	0.1549	0.0642	0.8129
<i>Ret</i>	12476	0.3008	0.2073	0.8533	-1.3859	3.0582
<i>Sigma</i>	12476	0.0598	0.0548	0.0232	0.0242	0.1385
<i>Turnover</i>	12476	-4.6262	-2.3373	34.3930	-125.8556	93.6453
<i>Abace</i>	12476	0.0588	0.0392	0.0662	0.0007	0.3931
<i>Age</i>	12476	2.3816	2.4849	0.6550	1.0986	3.3673

Table 3.
Impact of a deliberate integer cash dividend policy on stock price crash risk

	Full Sample		Only Samples with Cash Dividend Payouts	
	(1)	(2)	(3)	(4)
<i>Integer</i>	0.0562*** (3.6785)	0.0361** (2.3755)	0.0455*** (2.8572)	0.0309* (1.9588)
<i>Size</i>	-0.0166** (-2.1595)	-0.0139* (-1.7170)	-0.0057 (-0.6682)	-0.0029 (-0.3195)
<i>Lev</i>	-0.0853 (-1.4661)	-0.1203** (-1.9816)	-0.1420** (-2.1614)	-0.2023*** (-2.8792)
<i>ROA</i>	0.1439 (0.9493)	0.1347 (0.8728)	0.2112 (1.2136)	0.1372 (0.7576)
<i>BM</i>	-0.2799*** (-4.9607)	-0.3853*** (-6.4014)	-0.3069*** (-5.0900)	-0.4271*** (-6.3705)
<i>Ret</i>	-0.1464*** (-14.1873)	-0.1674*** (-13.7129)	-0.1285*** (-11.6421)	-0.1440*** (-11.1008)
<i>Sigma</i>	-4.1976*** (-11.2644)	-7.5942*** (-15.1930)	-4.3867*** (-10.5173)	-7.6010*** (-13.4887)
<i>Turnover</i>	0.0013*** (5.6150)	0.0008*** (3.2648)	0.0011*** (4.2257)	0.0006** (2.3289)
<i>Abace</i>	-0.1310 (-1.2820)	0.3102*** (2.9668)	-0.2766** (-2.5252)	0.1613 (1.4112)
<i>Age</i>	-0.0863*** (-7.3425)	-0.0871*** (-7.1178)	-0.0876*** (-6.8362)	-0.0868*** (-6.4599)
<i>Cons.</i>	0.6978*** (4.6451)	0.8763*** (5.3452)	0.4912*** (2.9320)	0.6672*** (3.6196)
<i>Year</i>	No	Yes	No	Yes
<i>Province</i>	No	Yes	No	Yes
<i>Industry</i>	No	Yes	No	Yes
N	12,476	12,475	9,942	9,941
Adj.R ²	0.0581	0.1078	0.0549	0.1011

Note: Values in parentheses are tstatistics based on firmlevel clustered standard errors. *** p<0.01; ** p<0.05; * p<0.1.

4.2 The impact of a deliberate integer cash dividend policy on stock price crash risk

The impact of a deliberate integer cash dividend policy on stock price crash risk is shown in Table 3.

Regardless of whether we control for year, province, or sub-industry fixed effects, Column (1) and Column (2) of Table 3 show that the deliberate integer cash dividend policy of manufacturing enterprises significantly increases future stock price crash risk. Under the semi-mandatory policy, some enterprises still do not pay cash dividends.

After excluding these samples, the results are shown in Column (3) and Column (4) of Table 3. The impact of the policy on stock price crash risk remains unchanged. Hypothesis 1 is verified.

4.3 Mediation effect test for information asymmetry

The test results for the mediating effect of information asymmetry are shown in Table 4. Information asymmetry, as measured by the dispersion of analysts' earnings forecasts, plays a significant partial mediating role in the process by which a deliberate integer cash dividend policy increases the risk of a stock price crash for manufacturing enterprises. This mediating effect is more significant in the sample that considers only cash dividend payouts. In the regression of Group (1) in Table 4, information asymmetry in samples with no analyst forecast divergence due to insufficient external analyst attention is recorded as "0." The regression results of Group (3) in Table 4 further exclude the impact of these samples, and the results show that information asymmetry still plays a significant mediating role. Based on the above analysis, Hypothesis 2 is verified. In addition, all enterprises with clear analyst divergence paid cash dividends in the previous fiscal year, indicating that enterprises paying cash dividends receive more external attention.

To test the robustness of the mediating effect of information asymmetry, we used the bootstrap method with a seed value of 23,456 and 2,000 resampling iterations.

The results show that: (1) in the full sample, the mean indirect effect of *Asymmetry* is 2.0436 ($t = 3.8225$), with a 95% confidence interval of [0.996, 3.091]; (2) in the sample of firms that pay cash dividends, the mean indirect effect of *Asymmetry* is 2.2868 ($t = 3.9748$), with a 95% confidence interval of [1.159, 3.414]; and (3) in the sample excluding firms with insufficient analyst coverage, the mean indirect effect of *Asymmetry* is 1.1732 ($t = 2.0815$), with a 95% confidence interval of [0.069, 2.278]. Overall, the mediating effect of information asymmetry is significantly established.

4.4 Mediation effect test for inefficient investment

The regression results of Group (1) in Table 5 show that inefficient investment plays a significant partial mediating role in the process of a deliberate integer cash dividend policy increasing the risk of a stock price crash for manufacturing enterprises. Hypothesis 3 is verified. Even when considering only the cash dividend payout sample, the mediating effect remains significant (see the regression of Group (2) in Table 5). Compared to the reduction in resource utilization rate caused by overinvestment, underinvestment more directly reflects insufficient corporate funds and slow development. Based on this, this paper discusses the impact of underinvestment further, as shown in the regression results of Group (3) and Group (4) in Table 5. The results show that in the samples with underinvestment, the mediating effect of inefficient investment is partially weakened.

Table 4.
Mediation effect test results for information asymmetry

	(1) Full Sample		(2) Only Samples with Cash Dividend Payouts		(3) Excluding Firms with Insufficient Analyst Attention	
	<i>Asymmetry</i>	<i>NCSKEW</i>	<i>Asymmetry</i>	<i>NCSKEW</i>	<i>Asymmetry</i>	<i>NCSKEW</i>
<i>Asymmetry</i>		2.0436*** (3.8238)		2.2868*** (3.9647)		1.1732** (2.0766)
<i>Integer</i>	0.0021*** (7.8642)	0.0318** (2.0872)	0.0017*** (5.7694)	0.0271* (1.7158)	0.0019*** (5.1864)	0.0314* (1.8541)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Cons.</i>	-0.0419*** (-13.6417)	0.9619*** (5.8233)	-0.0377*** (-10.8740)	0.7533*** (4.0781)	0.0137*** (3.1608)	0.4939** (2.3554)
<i>Year</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Province</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	12,475	12,475	9,941	9,941	7,290	7,290
<i>Adj.R²</i>	0.1572	0.1086	0.1716	0.1022	0.1307	0.0982

Note: Values in parentheses are t-statistics based on firmlevel clustered standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5.
Mediation effect test results for inefficient investment

	(1) Full Sample		(2) Samples with Cash Dividend Payouts		(3) Full Sample II		(4) Samples with Cash Dividend Payouts II	
	<i>Insufficient</i>	<i>NCSKEW</i>	<i>Insufficient</i>	<i>NCSKEW</i>	<i>Insufficient</i>	<i>NCSKEW</i>	<i>Insufficient</i>	<i>NCSKEW</i>
<i>Insufficient</i>		0.5774*** (4.0907)		0.5914*** (3.7056)		0.4607*** (2.6528)		0.4106** (2.2293)
<i>Integer</i>	0.0025** (2.4129)	0.0352** (2.3086)	0.0031*** (2.9295)	0.0295* (1.8616)	0.0022* (1.7510)	0.0328* (1.9321)	0.0027** (2.1207)	0.0309* (1.7804)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Cons.</i>	0.0830*** (6.4955)	0.7951*** (4.8194)	0.0514*** (3.8344)	0.6247*** (3.3926)	0.0576*** (3.1598)	0.4774** (2.2816)	0.0422** (2.3287)	0.4518** (2.0390)
<i>Year</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Province</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	12,393	12,393	9,926	9,926	7,284	7,284	6,346	6,346
<i>Adj.R²</i>	0.1064	0.1103	0.1019	0.1030	0.1134	0.0989	0.1072	0.0914

Note: Values in parentheses are tstatistics based on firmlevel clustered standard errors. *** p<0.01; ** p<0.05; * p<0.1.

This indicates that underinvestment does not necessarily have a greater impact on stock price crashes and that the adverse impact of overinvestment requires more attention.

To further verify the robustness of the mediating effect of inefficient investment, we used the bootstrap method with a seed value of 23,456 and 2,000 resampling iterations. The results show that: (1) in the full sample, the mean indirect effect of *Insufficient* is 0.5774 ($t = 4.2126$), with a 95% confidence interval of [0.293, 0.861]; (2) in the sample of firms that pay cash dividends, the mean indirect effect of *Insufficient* is 0.5914 ($t = 4.2896$), with a 95% confidence interval of [0.321, 0.862]; (3) in the sample excluding firms with insufficient analyst coverage, the mean indirect effect of *Insufficient* is 0.4607 ($t = 2.4876$), with a 95% confidence interval of [0.098, 0.824]; and (4) after considering both cash dividend payments and analyst coverage simultaneously, the mean indirect effect of *Insufficient* is 0.4106 ($t = 2.2158$), with a 95% confidence interval of [0.047, 0.774]. Overall, the mediating effect of inefficient investment is significantly established.

4.5 Endogeneity and robustness checks

In this section, we perform endogeneity treatments and robustness checks using propensity score matching (PSM), a sensitivity analysis of key omitted variables, high-dimensional fixed effects, replacement of explained variables, bootstrap self-sampling, and variable scale changes. For brevity, we report the detailed results of the key tests (PSM and placebo) in the main text. The results of the other checks are not presented.

4.5.1 Propensity Score Matching (PSM)

To mitigate selfselection bias arising from observable variables, we employ the PSM method as a robustness check. Nine covariates are selected (*Size*, *Lev*, *ROA*, *BM*, *Ret*, *Sigma*, *Turnover*, *Abace*, and *Age*) and a 1:2 nearestneighbor matching procedure with a caliper of 0.05 is adopted. After matching, systematic differences between the treated and control groups are eliminated. Specifically, the pseudo R^2 drops sharply from 0.070 to 0.002, and the LR chisquare statistic declines from 980.71 to 12.82. The corresponding pvalue changes from 0.000 to 0.171, which is no longer statistically significant at conventional levels. These results suggest that no systematic differences in covariates remain between the two groups after matching. Meanwhile, the mean standardized bias decreases from 17.5% to 2.2%, and the median bias falls from 10.5% to 1.2%. Both are well below the 10% threshold, which further confirms the high quality of the matching. In terms of common support, 3,064 of the 3,065 treated observations and all 9,411 control observations are retained. This results in a final weighted regression sample of 6,930 valid observations, with sample attrition remaining within an acceptable range.

The regression results based on the matched sample show that the estimated coefficient on *Integer* is 0.0400 ($t = 2.3313$), with a 95% confidence interval of [0.006, 0.074]. After mitigating selection bias due to observable variables, integer dividends still significantly increase firms' stock price crash risk, further confirming the robustness of our baseline findings.

4.5.2 Placebo test

To eliminate the influence of random factors on the regression results, we performed a placebo test using a Monte Carlo permutation approach. Specifically, we randomly reassign the core explanatory variable, the deliberate integer cash dividend (*Integer*), across the sample observations and repeat the baseline regression 2,000 times with a seed value of 23,456. This generates a distribution of random coefficients. The test results are reported in Table 6.

The results show that the observed coefficient from the original regression is 0.0361. Among the 2,000 random permutations, only 13 yield a coefficient greater than or equal to this value. This corresponds to a onesided uppertail pvalue of 0.0065 and a twosided pvalue of 0.0130. These results indicate that the positive effect of *Integer* on stock price crash risk differs significantly from the coefficient distribution generated by random assignment. This finding further rules out the interference of random factors and supports our core conclusion.

4.5.3 Omitted variable issue

Following the method of Cinelli et al. (2024), we performed a sensitivity analysis on potential omitted variables. We selected institutional investor ownership (*Institution*), the financing constraint SA index (*SA*), the shareholding ratio of the largest shareholder (*Top1*), and the shareholding ratio of the top ten shareholders (*Top10*) as test variables. The results show that the respective bias contribution values of these variables are -0.03549%, 0.0512%, -0.0012%, and -0.2161%. The absolute values of these bias contributions are all less than 1%, indicating that the regression results of this study are unlikely to be significantly affected by omitted variables.

4.5.4 High-dimensional fixed effects

Compared to multi-dimensional fixed effects, high-dimensional fixed effects, such as “*Industry × Year*” and “*Province × Year*,” can more effectively control time-varying factors at the industry and regional levels. These effects can also alleviate endogeneity problems. The regression results show that the impact conclusions still hold after using high-dimensional fixed effects. In particular, the mediating role of information asymmetry between dividend rounding and stock price crash risk becomes more significant after using high-dimensional fixed effects, playing a complete mediating role for manufacturing enterprises that pay cash dividends.

4.5.5 Replacement of explained variable

Instead of using the circulating market value, we calculate the stock price crash risk based on the weighted average method of the comprehensive market total market value. The empirical results remain unchanged.

4.5.6 Bootstrap self-sampling

We used the bootstrap self-sampling method for the robustness test. This method achieves an unbiased asymptotic population distribution through repeated sampling of the original sample. It also improves the validity and consistency of the estimation results. We set the seed value to 23,456 and conducted 2,000 random samplings. The robustness test results of the bootstrap self-sampling method are consistent with those above.

4.5.7 Changing variable scales

Differences in the dimensions of the variables in the model may lead to estimation bias and original errors in the variables. We adopted the method of changing variable scales and conducted a robustness test using Min-Max normalization for each variable. After normalizing the variables, the regression results are consistent with those above.

Table 6.
Placebo Test Results

Test	beta	c	n	p value	Monte Carlo error	
					SE(p)	[95% CI(p)]
upper	0.0361	13	2000	0.0065	0.0018	[0.0035, 0.0111]
lower	0.0361	1987	2000	0.9935	0.0018	[0.9889, 0.9965]
two-sided	0.0361		2000	0.0130	0.0018	[0.0080, 0.0180]



4.6 Heterogeneity analysis

4.6.1 Regional heterogeneity

Due to China's imbalanced economic development and significant regional marketization differences, the impact of deliberate integer cash dividends on stock price crash risk may exhibit significant heterogeneity based on the regions where enterprises are located. Accordingly, we conducted a heterogeneity analysis based on whether the enterprise is located in the eastern region of China.

As shown in Table 7, the results indicate that the positive impact of deliberate integer cash dividends on stock price crash risk is only significant in the eastern region. This region has faster marketization processes and more developed financial markets. External financial institutions also interpret corporate financial signals more rationally and acutely. However, deliberate integer cash dividends may be perceived as behavior that deviates from the enterprise's fundamentals, forming negative expectations.

At the same time, enterprises in the eastern region face more investment opportunities, especially in high-end innovation projects. The rigid expenditure of a deliberate integer cash dividend policy may lead to more significant investment distortion by crowding out funds for high-value investments. The deterioration of fundamentals caused by the decline in resource utilization and competitiveness is concentrated and released through a stock price crash. In addition, enterprises in the eastern region face stricter external supervision, including from institutional investors, analysts, and the media. Any "flaw" in the policy may be quickly identified and amplified, ultimately driving up the risk of a stock price crash.

4.6.2 Heterogeneity of the bank-enterprise relationship

The closeness of the bank-enterprise relationship directly affects enterprises' financing constraints and financial flexibility, which then affects the boosting effect of a deliberate integer cash dividend policy on stock price crash risk. The adverse impact of monetary fund mismatch or rigid expenditure is partially offset by a good, close bank-enterprise relationship, resulting in lower future stock price crash risk. A good bank-enterprise relationship is also an additional solution to the problem of information asymmetry.

Based on this, we conducted a heterogeneity analysis to determine if the enterprise has established a bank-enterprise relationship. Enterprises whose executives have backgrounds in commercial banking, are owned by commercial banks, or hold shares in commercial banks are considered to have a "commercial bank relationship." The results show that the deliberate integer cash dividend policy significantly increases the stock price crash risk of manufacturing enterprises without commercial bank relationships. The regression results are shown in Table 8.

4.6.3 Heterogeneity of enterprise ownership

Differences in enterprise ownership have heterogeneous impacts on the relationship between a deliberate integer cash dividend policy and stock price crash risk in terms of financing advantages, corporate governance capacity, and the government-enterprise relationship. State-owned enterprises have more financing channels and lower financing costs. Therefore, the crowding-out effect of rigid dividend expenditures on subsequent funds is relatively weak.

Table 7.
Regional heterogeneity analysis results

	Full Sample		Only Samples with Cash Dividend Payouts	
	Eastern Region	Non-Eastern Region	Eastern Region	Non-Eastern Region
<i>Integer</i>	0.0483*** (2.6962)	0.0153 (0.5382)	0.0426** (2.2966)	0.0027 (0.0901)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Cons.</i>	0.7192*** (3.6927)	1.1875*** (3.8798)	0.5925*** (2.7614)	0.7854** (2.1431)
<i>Year</i>	Yes	Yes	Yes	Yes
<i>Province</i>	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes
<i>N</i>	8,381	4,093	6,816	3,125
<i>Adj.R²</i>	0.1087	0.1185	0.1029	0.1057

Note: Values in parentheses are tstatistics based on firmlevel clustered standard errors. *** p<0.01; ** p<0.05.

Table 8.
Heterogeneity analysis results for bank-enterprise relationship

	Full Sample		Only Samples with Cash Dividend Payouts	
	With Commercial Bank Relationship	Without Commercial Bank Relationship	With Commercial Bank Relationship	Without Commercial Bank Relationship
<i>Integer</i>	-0.0055 (-0.1957)	0.0513*** (2.8307)	-0.0094 (-0.3121)	0.0456** (2.4414)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Cons.</i>	1.3002*** (4.6545)	0.6876*** (3.4962)	0.9049*** (2.6692)	0.5273** (2.4971)
<i>Year</i>	Yes	Yes	Yes	Yes
<i>Province</i>	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes
<i>N</i>	3,915	8,560	3,032	6,909
<i>Adj.R²</i>	0.1239	0.1045	0.1069	0.1023

Note: Values in parentheses are tstatistics based on firmlevel clustered standard errors. *** p<0.01; ** p<0.05.

Table 9.
Heterogeneity analysis results for enterprise ownership

	Full Sample		Only Samples with Cash Dividend Payouts	
	SOEs	Non-SOEs	SOEs	Non-SOEs
<i>Integer</i>	0.0350 (1.2169)	0.0358** (2.0077)	0.0179 (0.6165)	0.0331* (1.7859)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Cons.</i>	0.9104*** (3.5020)	0.6448*** (2.8429)	0.6425** (2.0719)	0.4280* (1.7073)
<i>Year</i>	Yes	Yes	Yes	Yes
<i>Province</i>	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes
<i>N</i>	4,283	8,141	3,267	6,631
<i>Adj.R²</i>	0.1154	0.1109	0.1166	0.1015

Note: Values in parentheses are t-statistics based on robust standard errors. *** p<0.01; ** p<0.05; * p<0.1.

In addition, the dividend decision-making of state-owned enterprises may be driven by policy catering, and government supervision greatly alleviates the problem of information asymmetry due to. Therefore, the promoting effect on stock price crash risk may be weaker.

Based on this, we conducted a heterogeneity analysis according to the nature of enterprise ownership. The results show that the impact of a deliberate integer cash dividend policy on the downside risk of the cash flow of non-state-owned manufacturing enterprises is more significant. The regression results are shown in Table 9.

5 Research conclusions and implications

5.1 Research conclusions

Taking listed manufacturing enterprises on the Main Boards of the Shanghai and Shenzhen Stock Exchanges from 2014 to 2024 as the research object, this paper systematically examines the impact of a deliberate integer cash dividend policy on stock price crash risk. It verifies the dual transmission mechanisms of information asymmetry and inefficient investment and discusses the heterogeneous results from different dimensions, including region, bank-enterprise relationship, and enterprise ownership.

The empirical conclusions remain unchanged after a series of endogeneity treatments and robustness checks (Supplementary Data 4 – Appendices_Robustness_Test_Results). The main conclusions are as follows:

(1) A deliberate integer cash dividend policy significantly increases the stock price crash risk of manufacturing enterprises. About a quarter of listed manufacturing enterprises announce the distribution of integer dividends, and this proportion is on the rise. These decisions partially deviate from actual earnings and cash flow fundamentals and significantly increase the risk of abnormal stock price fluctuations in the future.

(2) Both information asymmetry and inefficient investment play a significant mediating role. A deliberate integer cash dividend policy exacerbates the divergence of analysts' earnings forecasts and aggravates the problem of information asymmetry. This, in turn, drives up the risk of a stock price crash. This effect is more significant in enterprises that pay cash dividends. In addition, the subsequent inefficient investment caused by a deliberate integer cash dividend policy significantly increases the risk of a stock price crash. The negative impacts of over- and underinvestment need to be taken seriously. Further analysis shows that the mediating effect of inefficient investment is partially weakened in underinvestment samples. This indicates that crash risk driven by overinvestment due to resource mismatch is more prominent than crash risk driven by underinvestment. This finding deserves attention in the dividend decision-making process of manufacturing enterprises.

(3) The impact of a deliberate integer cash dividend policy on the stock price crash risk of manufacturing enterprises exhibits significant heterogeneity. This impact is more significant for enterprises in the eastern region, enterprises without bank-enterprise relationships, and non-state-owned enterprises.

5.2 Policy and practical implications

Based on the research conclusions above and the characteristics of the manufacturing industry, such as capital intensity, heavy investment, and long cycles, this paper presents the following implications:

First, it is crucial for manufacturing enterprises to formulate reasonable dividend policies based on their fundamentals. They should abandon irrational decision-making regarding excessive dividend catering and align cash dividends with actual cash flow and subsequent investment needs. When formulating dividend policies, enterprises should consider the necessary expenditures, such as capacity upgrades, R&D, and innovation. This is especially important for enterprises in the eastern region, non-state-owned enterprises, and enterprises with weak bank-enterprise relationships. This will help them avoid sacrificing potential high-return investment opportunities to cater to the market. On the other hand, enterprises should strengthen information disclosure to reduce market divergence. In addition to regular announcements, they should disclose the basis for their dividend policies to improve transparency and reduce information asymmetry.

Regulatory authorities must guide listed firms to distribute dividends rationally, improve risk prevention and control mechanisms, and balance “semi-mandatory” dividend distribution with the subsequent risks of dividend policy. Corporate dividend guidelines should appropriately emphasize the combination of the quality of current dividend distribution and enterprises' future development. At the same time, attention should be given to information disclosure related to enterprises' dividend policies. Special inquiries should be conducted for enterprises that have adopted integer-type lazy dividends for a long time. Considering the heterogeneous characteristics of regions, bank-enterprise relationships, and enterprise ownership, regulatory authorities can formulate targeted, detailed rules. In addition, enterprises can be required to report “dividend per share” rather than the conventional “dividend per ten shares” to directly reduce the “psychological guidance” effect of integer lazy dividends on external investors.

5.3 Research limitations and future directions

This study still has some limitations. First, the study only focuses on manufacturing firms listed on the Main Board. Future research can expand the scope of the sample to explore heterogeneity across different market boards.

Second, the study only uses a binary dummy variable to capture deliberate integer cash dividends. Future research can incorporate the dividend payout ratio to further explore the effects of heterogeneous crash risk by analyzing the association between integer dividend behavior and payout levels. Third, this paper mainly verifies two mediating paths: information asymmetry and inefficient investment. Future research can explore other transmission mechanisms, such as managerial agency problems and investor sentiment, to enrich the analytical framework of the risk effects of irrational dividend policies.

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SUPPLEMENTARY MATERIAL

Supplementary material accompanies this paper.

Supplementary Data 1 – Dataset

Supplementary Data 2 – Codebook

Supplementary Data 3 – Stata Script

Supplementary Data 4 – Appendices_Robustness_Test_Results

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Research data availability statement - Open science:

The full data supporting the findings of this study have been made available at:

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