

EXECUTIVE TRAITS AND STOCK PRICE CRASH RISK: EVIDENCE FROM CHINA'S GROWTH ENTERPRISE MARKET

Yuki Gong *, Ruixue Sun *, Yanmiao Cai **, Willa Li ***

* College of Computing, Georgia Institute of Technology, Atlanta, USA

** School of Management, Hunan University of Technology, Zhuzhou, China

*** Corresponding author, Business School, University of Auckland, Auckland, New Zealand

Contact details: Business School, University of Auckland, Auckland 1142, New Zealand



Abstract

How to cite this paper: Gong, Y., Sun, R., Cai, Y., & Li, W. (2025). Executive traits and stock price crash risk: Evidence from China's Growth Enterprise Market. *Corporate Ownership & Control*, 22(3), 47–61.
<https://doi.org/10.22495/cocv22i3art4>

Copyright © 2025 The Authors

This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).
<https://creativecommons.org/licenses/by/4.0/>

ISSN Online: 1810-3057

ISSN Print: 1727-9232

Received: 08.06.2025

Revised: 03.08.2025; 14.08.2025

Accepted: 25.08.2025

JEL Classification: G15, G32, G34, J24, M14

DOI: 10.22495/cocv22i3art4

This study examines how executive characteristics, including gender, educational attainment, and overseas experience, affect stock price crash risk among firms listed on China's Growth Enterprise Market (GEM) from 2009 to 2023. The results reveal that firms led by male executives are associated with significantly higher crash risk, whereas executives with higher education levels are linked to lower crash risk. Interestingly, contrary to prevailing expectations, overseas experience is positively related to crash risk. These relationships remain robust after controlling for firm-specific characteristics and addressing potential endogeneity using a Heckman two-stage regression approach. This study contributes to the behavioral corporate governance literature by providing novel evidence on the influence of executive demographic traits on crash risk in an emerging market setting. By combining a large-scale dataset with rigorous endogeneity controls, it offers fresh insights into executive governance mechanisms under conditions of high volatility and information asymmetry.

Keywords: Executive Characteristics, Stock Price Crash Risk, Behavioral Corporate Governance, Emerging Markets, Information Transparency

Authors' individual contribution: Conceptualization — Y.G. and R.S.; Methodology — Y.G. and R.S.; Software — R.S.; Validation — Y.C.; Formal Analysis — Y.G. and R.S.; Investigation — Y.C.; Resources — W.L.; Data Curation — R.S. and Y.C.; Writing — Original Draft — Y.G., R.S., Y.C., and W.L.; Writing — Review & Editing — Y.G., R.S., Y.C., and W.L.; Visualization — R.S.; Supervision — Y.G.; Project Administration — Y.G.; Funding Acquisition — W.L.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

Stock price crash risk, defined as sudden and extreme declines in firm value, poses a serious challenge to investor protection and market efficiency. These crash events are often linked to managerial behavior, particularly the tendency to withhold negative information until its eventual forced release triggers sharp market corrections (Jin & Myers, 2006; Hutton et al., 2009). While much attention has been paid to firm fundamentals and financial opacity (Chen et al., 2001; Bleck & Liu, 2007), there is growing recognition that executive characteristics may also play a pivotal role in shaping crash risk, especially through their influence on risk-taking and disclosure decisions.

Against this backdrop, our study asks:

RQ: To what extent do observable executive traits (particularly gender, educational attainment, and international experience) affect stock price crash risk through their impact on bad news hoarding behavior?

This question is particularly relevant in light of behavioral corporate governance theories (Hambrick & Mason, 1984; Bertrand & Schoar, 2003), which suggest that executives' values, experiences, and identities systematically influence corporate outcomes. Existing literature has focused mainly on chief executive officer (CEO) overconfidence (Malmendier & Tate, 2008; Kim et al., 2016), but other potentially influential traits remain underexplored, despite evidence that they shape strategic and ethical decision-making.

Moreover, prior studies are largely grounded in developed market contexts, where stronger governance and higher transparency may buffer firms from the behavioral effects of individual executives. Emerging markets present a different institutional environment — characterized by weaker investor protection, greater information asymmetry, and more heterogeneous governance practices — where executive behavior may have amplified effects. China's Growth Enterprise Market (GEM), in particular, offers a compelling setting to examine this question due to its emphasis on innovation, high volatility, and relatively less mature oversight mechanisms. Specifically, we investigate the relation between executive characteristics — specifically gender, educational attainment, and overseas experience — and stock price crash risk among firms listed on the GEM from 2009 to 2023.

This research makes several contributions to the literature. First, by expanding the focus beyond overconfidence to incorporate executive gender, education, and overseas background, we respond to calls for a more nuanced understanding of how executive heterogeneity affects firm risk profiles (Bertrand & Schoar, 2003; Gull et al., 2025). Our study highlights that gender diversity and higher education among executives can mitigate crash risk, aligning with prior findings on the positive governance effects of these traits (Faccio et al., 2016; Wang & Fung, 2022). In contrast, we find that international experience, while often associated with enhanced governance in developed contexts (Dai & Liu, 2009; Xu & Hou, 2021), may elevate crash risk in emerging markets, suggesting that the benefits of global exposure are not universally transferable.

Second, by situating our analysis in China's GEM, we extend the geographic scope of crash risk research, which has largely focused on firms in developed markets (Kim et al., 2011; Callen & Fang, 2015). Our findings underscore the importance of considering institutional context when evaluating the impact of executive traits on corporate outcomes, supporting arguments that emerging market dynamics can intensify the effects of managerial behaviors (Claessens et al., 2000; Cao et al., 2016).

Finally, our results have practical implications for investors, boards, and policymakers. For investors, executive background information may serve as a valuable indicator of firm-specific risk exposure. For corporate boards, these findings emphasize the importance of incorporating diversity and educational criteria into leadership selection processes. For policymakers, the results suggest that strengthening disclosure standards and improving executive accountability mechanisms could mitigate crash risk, particularly in emerging markets where governance structures are still evolving (Habib et al., 2017).

The remainder of this paper is organized as follows. Section 2 reviews the relevant literature. Section 3 describes the research methodology. Section 4 presents the empirical results. Section 5 discusses the findings and implications. Section 6 concludes, identifies research limitations, and offers suggestions for future research.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Executive characteristics

Executive characteristics have garnered considerable attention in the corporate governance literature due

to their profound influence on firm-level outcomes. Drawing on the premise that executives' cognitive bases and personal values shape strategic choices, prior research has explored various dimensions of executive traits. This section reviews the existing evidence on how executive characteristics affect firm performance, internal governance, and risk-related disclosure behavior.

2.1.1. Executive characteristics and firm performance

Executive characteristics have been widely studied in the context of firm performance. A growing body of literature underscores the positive impact of executive diversity and individual traits on organizational outcomes. Hambrick (1997) and Shleifer and Vishny (1986) find that diverse executive teams, higher educational attainment, and greater female representation are generally associated with enhanced financial performance and reduced earnings manipulation. Knight et al. (1999) observe that higher education levels among top executives contribute positively to firm growth, while Gull et al. (2025) highlight the value of female executives' social capital in improving firm outcomes. Rahman and Chen (2023) further report a positive relationship between executive age and firm performance.

Additionally, personal managerial styles and risk preferences have been shown to influence long-term outcomes. Bertrand and Schoar (2003) argue that CEOs' individual styles, such as aggressiveness or conservatism, shape corporate strategies and significantly affect profitability. Aktas et al. (2016) confirm that personal traits and risk tolerance directly influence firms' merger and acquisition behavior, with implications for long-term firm valuation.

In addition to the impact of CEO characteristics on financial performance, recent research has started shifting focus to their influence on non-financial performance. For example, Gong et al. (2025) demonstrate that CEOs' personal political orientations affect corporate social responsibility (CSR) performance. Specifically, firms with newly politically connected or unconnected CEOs significantly adjust CSR investments following U.S. presidential transitions, reflecting how CEO individual ideology informs strategic responses to changing political environments, as well as the implications on non-financial performance.

However, some studies report mixed or even adverse effects. Bleck and Liu (2007) suggest that executive heterogeneity may impede performance in environments that rely heavily on consensus. Yim (2013) finds that older executives may negatively affect performance, a result that contrasts with Hambrick and Mason (1984). Furthermore, Bertrand and Schoar (2003) indicate that traits such as gender, political background, and education do not uniformly influence firm outcomes across all industries. Santoso and Setiawan (2024) further suggest that the performance implications of CEO diversity depend on contextual factors such as board independence and shareholder rights, indicating that leadership traits interact with governance structures. These contrasting results imply that the effectiveness of executive characteristics is likely to be context-dependent, shaped by firm-specific and environmental factors.

2.1.2. Executive characteristics and strategic and governance decisions

Executive characteristics are closely linked to internal governance quality and firms' strategic orientations. A growing body of literature highlights how traits such as education, age, gender, and tenure shape decision-making styles and corporate oversight. Saidu (2019) reports that highly educated executives are more likely to implement strong internal controls, enhancing overall governance quality. In contrast, Kim et al. (2023) suggest that older or long-tenured executives may be associated with weaker monitoring, possibly due to entrenchment effects or diminished responsiveness to external pressures.

Hambrick (1997) notes that CEOs with longer tenure often favor more conservative and stable strategic approaches. Consistent with this view, Knight et al. (1999) argue that large tenure gaps within the executive team can impede effective communication and hinder organizational diversification efforts. These findings suggest that leadership stability plays a dual role in reinforcing control while potentially constraining adaptability.

The role of gender in strategic behavior is also noteworthy. While earlier research yielded mixed results, more recent studies provide stronger evidence of gender-related effects. Wang and Fung (2022) and Faccio et al. (2016) document that firms led by female executives tend to pursue more cautious investment policies and are less likely to engage in large-scale mergers and acquisitions. This gender-based conservatism reflects broader risk preferences and aligns with observed patterns of prudent capital deployment.

Moreover, educational and professional experiences shape strategic vision. For instance, Lin et al. (2018) find that executive age and tenure contribute positively to investment efficiency, primarily through better internal alignment and strategic discipline. Longer-serving executives often possess deeper institutional knowledge, which facilitates more informed and stable long-term planning.

Finally, recent evidence suggests that the impact of executive traits is contingent on institutional and organizational contexts. Santoso and Setiawan (2024) demonstrate that the effectiveness of CEO diversity is moderated by factors such as board independence and shareholder rights. In environments with strong governance frameworks, diverse leadership teams are more likely to translate their heterogeneity into strategic value. These findings emphasize that executive characteristics influence not only who makes decisions, but also how effectively those decisions are implemented within existing governance structures.

2.1.3. Executive characteristics and risk-taking practices

Executive characteristics also influence broader corporate behaviors, particularly in the domains of risk-taking practices. Xu and Hou (2021) find that overseas education among executives enhances CSR engagement, reflecting a greater sensitivity to reputational risk and social expectations. In terms of strategic risk-taking, demographic traits such as gender and tenure exert meaningful influence.

For example, Wang and Fung (2022) show that longer average tenure and greater female representation are linked to more conservative strategic behavior, as firms led by female executives are less likely to pursue large-scale acquisitions. This pattern of cautious expansion signals lower risk appetite and reflects a deliberate avoidance of high-variance outcomes.

Recent studies also emphasize the role of international exposure in shaping executives' approach to risk disclosure and risk management. Zou et al. (2025) show that CEOs with overseas experience are more likely to improve climate risk disclosures, signaling greater strategic foresight and responsiveness to long-term environmental risk. Tang et al. (2024) further find that CEO characteristics (such as overseas background, age, and duality) significantly affect downside risk, reinforcing the argument that executive traits shape firms' overall risk profiles.

With respect to financial risk, Zheng et al. (2024) document that higher executive education levels are associated with lower default risk, suggesting that education enhances decision quality and financial prudence. Zhang (2025) supports this view by showing that CEOs with overseas experience are less likely to delay bad news disclosures, indicating stronger internal governance and a lower tolerance for concealment risk.

Taken together, these findings highlight that executive demographics and experiences influence not only strategic outcomes, but also the firm's willingness to bear risk and its transparency in communicating that risk. As such, executive characteristics are crucial determinants of firms' exposure to uncertainty and the integrity of their external disclosures.

2.2. Stock price crash risk

This section reviews the existing literature on stock price crash risk to clarify the underlying mechanisms and identify key executive attributes that influence this outcome.

2.2.1. Behavioral finance and rational expectations

Early research on stock price crash risk primarily draws from behavioral finance, emphasizing investor psychology and market anomalies. Blanchard et al. (2010) introduce the concept of the "rational bubble", suggesting that external shocks can cause stock prices to deviate significantly from fundamental values without a corresponding increase in actual corporate assets, resulting in eventual crashes. Similarly, Tang et al. (2017) find that heightened marginal returns on total capital could elevate investment risk, leading to increased crash susceptibility.

Moreover, Easterbrook (1984) identifies a negative correlation between unexpected stock price fluctuations and unexpected returns, suggesting that heightened volatility increases the likelihood of stock price crashes. Building on this, Callen and Fang (2015) employ a modified generalized autoregressive conditional heteroskedasticity (GARCH) model and find that unanticipated price movements significantly exacerbate crash risk. French et al. (1987) also introduce the concept of the volatility feedback effect, demonstrating that rising expected volatility leads to higher required returns, which in

turn depresses current stock prices and generates asymmetric return-volatility patterns. Collectively, these studies underscore the volatility feedback mechanism, whereby sharp price movements elevate perceived risk and return expectations, amplifying downward price pressure, particularly when adverse information is revealed.

Recognizing the limitations of homogeneity assumptions, Hong and Stein (2003) introduce investor heterogeneity as a mechanism through which divergent beliefs can amplify market volatility and increase crash risk. They further argue that short-sale constraints postpone the incorporation of bad news into prices, which is then abruptly revealed when pessimistic investors become the marginal traders, ultimately triggering a crash.

Cao et al. (2002) propose an “information blockage” model, suggesting that during price run-ups, informed investors act while uninformed ones wait, leading to abrupt corrections when sentiment shifts. Similarly, Chen et al. (2001) highlight that abnormal trading volumes may reflect investor disagreement and signal an impending crash. These mechanisms underscore the behavioral perspective that informational asymmetry and belief divergence drive crash risk. However, as Habib et al. (2017) note, empirical work on investor heterogeneity remains scarce due to measurement challenges, calling for more refined proxies to integrate behavioral dimensions into crash risk models.

2.2.2. Information asymmetry and market structure

Information asymmetry plays a critical role in driving stock price crash risk, with market structure and disclosure quality serving as important moderating factors. Empirical studies have consistently shown that developed markets with strong investor protections and transparent disclosure systems tend to exhibit lower volatility and a reduced likelihood of stock price crashes (Morck et al., 2000). In contrast, Jin and Myers (2006) argue that in less-developed markets, weak institutional oversight and limited transparency increase crash risk by facilitating the accumulation of undisclosed negative information.

Building on this foundation, a growing amount of research emphasizes how institutional arrangements and external monitoring mechanisms shape the quality of the information environment. Luo and Ren (2016) find that imbalanced regulatory policies on securities lending and margin financing contribute to market fragility. An et al. (2020) demonstrate that frequent media coverage improves transparency and helps mitigate crash risk, particularly in regions with weaker regulatory oversight. Claessens et al. (2000) provide evidence that prevailing societal norms, such as religious adherence and ethical culture, enhance disclosure quality and reduce the likelihood of extreme negative returns. Hutton et al. (2009) use earnings opacity as an indicator of poor disclosure and report a positive relationship with crash risk. Further, Habib et al. (2017) show that poor financial reporting quality, real earnings management, and complex accounting standards increase the risk of price crashes by allowing negative news to accumulate, whereas conservative accounting practices and comparable disclosures have a mitigating effect.

2.2.3. Corporate governance and external factors

Corporate governance and external contextual factors play an important role in shaping stock price crash risk, primarily through their influence on information transparency and managerial decision-making. In terms of internal governance, Kim et al. (2011) find that tax avoidance behavior increases crash risk, while subsequent research explores how executive attributes, such as CEO characteristics, shape firms’ risk-taking and disclosure decisions. Consistent with this view, Habib et al. (2017) argue that ineffective governance structures, lack of board independence, and entrenched executives weaken monitoring and facilitate managerial bad news hoarding, which significantly elevates stock price crash risk. In addition to internal governance mechanisms, external shareholder actions and political contexts also influence crash risk. Liang et al. (2021) show that large-scale stock selloffs by major shareholders increase crash risk by signaling investor uncertainty. Kim et al. (2024) find that crash risk rises around major political events in China due to strategic delays and abrupt disclosures of negative information.

2.3. Executive characteristics and stock price crash risk

A growing stream of literature grounded in behavioral economics and upper echelons theory has examined how executive characteristics shape firm-level risk exposure, including the risk of stock price crashes. Among these traits, overconfidence has received the most extensive attention. Malmendier and Tate (2008) argue that overconfident executives tend to underestimate risks and ignore negative signals, allowing problems to accumulate until they eventually trigger severe market corrections. Consistent with this, Kim et al. (2011) and Kim et al. (2016) show that overconfident CEOs engage in aggressive investment strategies and withhold bad news, thereby increasing crash risk.

Gender has also emerged as a salient executive attribute linked to crash risk. Pham et al. (2025) find that female CEOs are associated with fewer crash events, attributing this to greater ethical awareness and risk aversion. Similarly, Faccio et al. (2016) report that male executives tend to pursue more aggressive financial policies and exhibit higher risk tolerance, increasing downside exposure. Female executives, by contrast, are more likely to adopt prudent disclosure policies and maintain stronger internal controls, thereby enhancing transparency.

In addition to psychological and demographic traits, recent studies also explore the effect of formative life experiences. Chen et al. (2021) find that executives exposed to natural disasters or early-life hardship display higher risk tolerance and are more prone to bad-news hoarding, which heightens the likelihood of stock price crashes. These findings collectively support the behavioral view that executive identity influences disclosure behavior under uncertainty.

However, important gaps remain in the current literature. While prior studies have provided valuable insights into isolated executive traits (such as overconfidence or gender), they tend to focus narrowly on single characteristics without considering how multiple observable attributes jointly shape firms’ crash risk. Moreover, much of

the evidence is based on developed markets such as the U.S., where strong institutional oversight may attenuate the influence of individual executives. Little is known about how observable traits such as gender, education, and overseas experience affect crash risk in emerging markets characterized by weaker governance and higher information asymmetry. In particular, China's GEM offers a useful setting to examine whether and how executive diversity affects downside risk in a context where personal discretion is more likely to influence disclosure decisions. Our study fills this gap by jointly examining the relation between three executive characteristics (gender, education, and overseas experience) and stock price crash risk in GEM-listed firms.

2.4. Hypotheses development

Prior literature underscores that stock price crash risk largely stems from managerial behaviors, particularly executives' tendencies to withhold adverse information, allowing it to accumulate and be suddenly released. These behaviors are closely associated with observable executive characteristics such as gender, educational background, and international experience, which shape their decision-making styles, risk preferences, and disclosure attitudes. Drawing from upper echelons theory (Hambrick & Mason, 1984), this section formulates three hypotheses to investigate the impact of specific executive traits on stock price crash risk in GEM-listed firms.

2.4.1. Executive's gender and stock price crash risk

Gender is one of the most visible and studied dimensions of executive identity. Existing research suggests that female executives tend to be more conservative in decision-making, exhibit stronger ethical standards, and promote greater transparency in corporate governance compared to male executives (Faccio et al., 2016). Female leaders are less prone to overconfidence and more likely to seek consensus, which reduces the likelihood of excessive risk-taking and managerial bad news hoarding. From a governance perspective, Francis et al. (2015) find that male executives tend to exhibit greater risk-taking behavior and lower transparency, which can increase agency costs and heighten the likelihood of concealing negative information. In contrast, female executives are associated with improved internal control, reduced opacity, and a lower probability of sudden bad-news releases. Behavioral finance literature further supports this argument by linking risk appetite to gender. Male executives generally display higher risk tolerance and are more likely to pursue aggressive investment strategies (Peng & Wei, 2007). In contrast, Faccio et al. (2016) find that firms led by female CEOs exhibit lower leverage and more conservative financial policies, which reflect a greater aversion to risk and may help mitigate the likelihood of extreme negative stock returns when adverse news occurs. Taken together, the first hypothesis is proposed:

H1: GEM-listed firms with male executives exhibit higher stock price crash risk than those with female executives.

2.4.2. Executive education and stock price crash risk

An executive's educational background reflects their cognitive ability, strategic reasoning, and governance quality. Highly educated executives are generally better equipped to assess environmental uncertainty and make rational, well-informed decisions, thereby reducing the likelihood of judgment errors and the accumulation of bad news (Wang & Fung, 2022). They are also more likely to recognize and correct their mistakes early, which reduces the risk of a delayed disclosure shock. From a governance perspective, Zhou et al. (2013) show that education level positively correlates with executive capability, which contributes to improved firm performance and reduced agency conflicts. Saidu (2019) finds that better-educated executives are more effective in making research and investment decisions, supporting long-term firm value. These traits strengthen market confidence and reduce investors' likelihood of sudden selloffs. Habib et al. (2017) further argue that poor financial reporting, real earnings management, and the use of complex accounting standards elevate crash risk, while transparency and comparability serve as mitigating factors, both of which are more likely under highly educated leadership. Taken together, education helps enhance transparency, reduce managerial bias, and improve governance, thereby lowering the likelihood of price crashes. Therefore, the second hypothesis is proposed:

H2: Higher executive education levels negatively correlate with stock price crash risk in GEM-listed firms.

2.4.3. Executive overseas experience and stock price crash risk

As China integrates more deeply with the global economy, a growing number of corporate executives have overseas education or work experience. These internationally experienced leaders often bring broader perspectives, exposure to advanced corporate governance practices, and a stronger awareness of disclosure standards (Gull et al. 2025; Cao et al., 2016). Their global orientation allows them to implement best practices and align firm behavior with international expectations.

Executives with overseas backgrounds are typically more familiar with the regulatory discipline and transparency culture of developed capital markets. These experiences foster a more cautious attitude toward information disclosure and reduce the likelihood of bad news hoarding. Moreover, they often possess stronger professional qualifications and more rational decision-making styles, contributing to operational stability and investor confidence (Dai & Liu, 2009; Giannetti et al., 2015). Habib et al. (2017) also find that firms with stronger governance mechanisms, such as experienced executives, robust internal controls, and transparent reporting, are less prone to crash risk, further supporting the view that overseas experience strengthens governance.

Therefore, executives with international backgrounds are more likely to reduce crash risk by enhancing transparency and improving decision quality. The third hypothesis is proposed as follows:

H3: GEM-listed firms with executives lacking overseas experience face higher crash risk than those with internationally experienced executives.

3. RESEARCH METHODOLOGY

3.1. Data and sample

This study investigates the impact of executive characteristics on stock price crash risk using data from firms listed on China's GEM over the period from 2009 to 2023¹. This timeframe captures the evolution of China's capital markets under a more standardized institutional framework. Specifically, China's harmonization of its accounting standards with International Financial Reporting Standards (IFRS) in 2007 and the official launch of the GEM in 2009 provide a relevant backdrop for examining how executive traits affect crash risk in an emerging market context characterized by institutional transformation and market development.

To address concerns about data representativeness and quality, we do not include all GEM firms by default. Instead, following established practices, we apply a series of filters to exclude firm-year observations that do not meet baseline standards for reliability and completeness. Specifically, firms are excluded if they: 1) are in their initial public offering (IPO) year, to avoid the abnormal stock price volatility typically observed during listing; 2) have fewer than 30 trading weeks within a fiscal year, to ensure the reliability of crash risk measures; or 3) lack essential executive information, such as gender, educational background, or overseas experience. Additionally, firm-year observations with extreme outliers or placeholder values are removed to enhance data integrity.

After applying these criteria, the final sample consists of 11,274 firm-year observations. Firm-level financial and executive characteristic data are obtained from the Xenophon Economic and Financial Database (by China Center for Economic Research [CCER]) and the RESSET Financial Research Database, both of which are widely used in empirical research on Chinese capital markets.

3.2. Key variables

3.2.1. Dependent variable

To investigate the influence of executive characteristics on stock price crash risk, we employ two widely used measures of crash risk: *NCSKEW* and *DUVOL*, following prior literature (Andreou et al., 2016; Hutton et al., 2009; Kim et al., 2011; Gull et al., 2025; Li et al., 2025). The detailed definitions of the dependent variables are provided in the Appendix. To construct these measures, we first estimate the firm-specific weekly return ($W_{j,t}$) as:

$$W_{j,t} = \ln(1 + \varepsilon_{j,t}) \quad (1)$$

where, $\varepsilon_{j,t}$ is the idiosyncratic return for firm j in week t , obtained as the residual from the following extended market model regression:

$$r_{j,t} = \alpha_j + \beta_{1,j}r_{m,t-2} + \beta_{2,j}r_{m,t-1} + \beta_{3,j}r_{m,t} + \beta_{4,j}r_{m,t+1} + \beta_{5,j}r_{m,t+2} + \varepsilon_{j,t} \quad (2)$$

In this equation, $r_{j,t}$ is the weekly return of firm j in week t , and $r_{m,t}$ denotes the weekly return of

the market index for the GEM. Following Dimson (1979), the model includes two lagged and two leading market return terms to address non-synchronous trading effects.

NCSKEW captures the asymmetric distribution of firm-specific weekly returns over a fiscal year, reflecting the extent to which negative information is concealed and subsequently released. It is calculated as:

$$NCSKEW_t = - \frac{[n(n-1)^{\frac{3}{2}} \sum W_t^3]}{[(n-1)(n-2)(\sum W_t^2)^{\frac{3}{2}}]} \quad (3)$$

where, n is the number of trading weeks, W_t denotes the firm-specific weekly return, $\sum W_t^3$ represents the third moment (skewness), and $\sum W_t^2$ is the second moment (variance).

DUVOL quantifies the asymmetry of return volatilities between weeks with negative returns and weeks with positive returns, calculated as:

$$DUVOL_t = \ln \left\{ \frac{[(n_u - 1) \sum_{down} W_t^2]}{[(n_d - 1) \sum_{up} W_t^2]} \right\} \quad (4)$$

where, n_u and n_d are the number of weeks with negative and positive firm-specific returns, respectively. $\sum_{down} W_t^2$ and $\sum_{up} W_t^2$ represent the variances of returns in negative and positive weeks.

Consistent with Hutton et al. (2009) and Kim et al. (2011), we use weekly returns to mitigate the effects of thin trading and to better capture short-term information dynamics. Higher values of *NCSKEW* and *DUVOL* indicate a greater likelihood of future stock price crashes. These measures collectively capture different aspects of crash risk, with *NCSKEW* focusing on distributional asymmetry and *DUVOL* emphasizing volatility asymmetry across different return regimes.

3.2.2. Independent variable

This study focuses on three key executive characteristics as independent variables: gender, educational attainment, and overseas experience. These three executive characteristic variables are manually collected from firms' annual reports and verified using publicly available biographical sources.

Gender (*EG*) is measured by a binary variable, which equals one if the firm's general manager (GM) is male and zero otherwise. Prior literature indicates that male executives tend to engage in higher risk-taking behaviors, which may amplify the likelihood of bad news hoarding and increase stock price crash risk (Faccio et al., 2016; Wang & Fung, 2022).

Educational attainment is proxied by two dummy variables to capture the non-linear effects of executive education levels. Given that most GMs of GEM-listed firms possess relatively high education levels, we categorize education into three groups: postgraduate degree, bachelor's degree, and below bachelor's degree. A dummy variable *D1* is assigned a value of one if the GM has attained a postgraduate degree and zero otherwise. Another dummy variable, *D2*, is set to one if the GM holds a bachelor's degree and zero otherwise. Executives with education below the bachelor's level serve as the reference group. This approach avoids imposing an assumption of equidistant or proportional segmentation across

¹ Because the empirical analyses were conducted in late 2024, 2023 represents the most recent financial year for which complete and validated financial and executive data were available at the time of data collection.

education levels, recognizing that the relationship between education and crash risk may not be linear (Francis et al., 2015).

Overseas experience (*OE*) is captured by a binary indicator equal to one if the GM has overseas study or work experience, and zero otherwise. Although prior studies suggest that international exposure may broaden executives' perspectives and enhance governance quality (Dai & Liu, 2009; Xu & Hou, 2021), the effectiveness of such experience in emerging market contexts remains inconclusive.

3.3. Regression model

To examine the impact of executive characteristics on stock price crash risk (*H1-H3*), the baseline model is specified below. Our methodology is grounded in prior literature on stock price crash risk. Specifically, we adopt crash risk measures and empirical frameworks from studies such as Kim et al. (2011) and Andreou et al. (2016). While the technical tools are established, our research makes a novel contribution by integrating underexplored executive traits (gender, education, overseas experience) in the context of GEM-listed firms.

$$\text{CashRisk}_{it} = \alpha_0 + \alpha_1 \text{EC}_{it} + \text{Controls}_{it} + \text{Year}_i + \text{Industry}_t + \varepsilon_{it} \quad (5)$$

where, *i* and *t* denote firm and fiscal year, respectively. The dependent variable, *CrashRisk*, is measured by *NCSKEW* and *DUVOL* as defined previously. The vector *EC* captures executive characteristics, including gender, educational attainment, and overseas experience, as described in subsection 3.2.2.

We control for several firm-specific factors that may influence crash risk, following prior studies (Hutton et al., 2009; Kim et al., 2011; Andreou et al., 2016). Firm size (*SIZE*), measured as the natural logarithm of total market capitalization, accounts for the potential inverse relationship between firm scale and crash risk. Profitability (return on assets — *ROA*), defined as net income divided by total assets, captures the firm's financial performance. Leverage (*LEV*), calculated as total liabilities divided by total assets, reflects financial risk. Firm age (*AGE*), measured as the natural logarithm of years since IPO, controls for maturity effects. Additionally, *AW* and *SW* represent the average and standard deviation of firm-specific weekly residual returns over a rolling three-year window, capturing return characteristics that may affect crash risk. Earnings management (*EM*) is proxied by the absolute value of discretionary accruals, controlling for the potential impact of financial reporting behavior on crash risk.

To address unobserved heterogeneity across industries and years, all regressions include industry and year fixed effects. Standard errors are clustered at the firm level to correct for potential serial correlation. Detailed definitions of all variables are provided in the Appendix.

4. RESULTS

4.1. Descriptive statistics

Table 1 presents summary statistics for the firms included in the sample, including the mean, median, standard deviation, and the 25th and 75th percentiles of key variables.

Table 1. Descriptive statistics

Variables	Obs.	Mean	Std. dev.	Median	P25	P75
<i>NCSKEW</i>	11,274	-0.27	0.85	-0.23	-5.89	3.12
<i>DUVOL</i>	11,274	-0.19	0.56	-0.21	-3.95	2.48
<i>EG</i>	11,274	0.95	0.21	1.0	0.0	1.0
<i>D1</i>	11,274	0.35	0.48	0.0	0.0	1.0
<i>D2</i>	11,274	0.5	0.5	1.0	0.0	1.0
<i>OE</i>	11,274	0.02	0.14	0.0	0.0	1.0
<i>AW</i>	11,274	-0.001	0.025	0.0	-0.18	0.15
<i>SW</i>	11,274	0.048	0.018	0.045	0.01	0.18
<i>SIZE</i>	11,274	22.18	1.3	22.1	18.0	26.3
<i>ROA</i>	11,274	0.031	0.08	0.027	-0.45	0.35
<i>LEV</i>	11,274	0.512	0.19	0.51	0.02	0.93
<i>EM</i>	11,274	0.072	0.11	0.045	0.001	0.65
<i>Age</i>	11,274	1.61	0.55	1.61	0.0	3.0

Note: The sample includes filtered GEM-listed firms from 2009 to 2023, excluding IPO years, firms with fewer than 30 trading weeks, and those with missing executive data. See subsection 3.1 for full filtering details.

The mean values of the two dependent variables, *NCSKEW* and *DUVOL*, are -0.272 and -0.196, respectively. These figures indicate that GEM-listed firms exhibit a higher level of stock price crash risk compared to samples from prior studies focusing on main board firms (Xu et al., 2013). This observation is consistent with the characteristics of GEM firms, which tend to have higher growth potential and greater stock return volatility, making them more susceptible to crash risk. Furthermore, the substantial difference between the maximum and minimum values of both crash risk measures suggests considerable variation in crash risk across the sample firms, reflecting heterogeneity in information disclosure practices and market performance.

Regarding executive characteristics, the mean value of *EG* (executive gender) is 0.948, indicating that approximately 95% of CEOs are male. This highlights the continued dominance of male executives in GEM-listed firms. For educational attainment, the mean values of *D2* (bachelor's degree) and *D1* (postgraduate degree) are 0.503 and 0.348, respectively, with median values of 1 and 0. These results suggest that the majority of CEOs hold at least a bachelor's degree, and a significant proportion have pursued advanced degrees. This trend is consistent with recent findings on the increasing emphasis on executive education in China (Wang et al., 2022). The variable *OE* (overseas experience) has a mean of 0.021, indicating that only 2.1% of CEOs have overseas study or work experience. This low proportion underscores the predominantly domestic background of executives in GEM-listed firms, with limited international exposure.

For the control variables, *AW* and *SW* have mean values of -0.001 and 0.049, respectively. The average firm size, proxied by the natural logarithm of total assets (*SIZE*), is 22.179, corresponding to an estimated firm size of approximately RMB 4.29 billion. The average return on assets (*ROA*) is 0.031, suggesting that net income accounts for about 3.1% of total assets. The average leverage (*LEV*) is 0.512, indicating that liabilities represent approximately 51.2% of total assets. The earnings management proxy (*EM*) has a mean value of 0.072, suggesting a moderate level of earnings management among the sample firms. The large dispersion between its minimum and maximum values further highlights significant variation in financial reporting practices across firms. Lastly, the median value of the *AGE* variable (measured as

the natural logarithm of the number of years since IPO) is 1.609, which corresponds to an approximate listing duration of five years. This indicates that the sample firms are relatively young and still in the early stages of development in the capital market.

Table 2 presents the Pearson correlation coefficients among the variables. As shown, the two crash risk proxies, *NCSKEW* and *DUVOL*, are highly and positively correlated (0.862), suggesting that they capture similar underlying information about stock price crash risk.

Table 2. Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) <i>NCSKEW</i>	1												
(2) <i>DUVOL</i>	0.862	1											
(3) <i>EG</i>	0.023	0.019	1										
(4) <i>D1</i>	-0.053	-0.047	0.185	1									
(5) <i>D2</i>	-0.048	-0.033	0.171	0.163	1								
(6) <i>OE</i>	0.017	0.015	0.165	0.127	0.170	1							
(7) <i>AW</i>	-0.005	-0.011	0.001	-0.013	-0.026	-0.004	1						
(8) <i>SW</i>	0.011	0.003	-0.005	-0.002	0.001	0.007	0.181	1					
(9) <i>SIZE</i>	-0.094	-0.089	0.027	0.159	0.172	0.040	-0.115	-0.268	1				
(10) <i>ROA</i>	0.006	0.001	-0.018	0.018	0.025	-0.020	-0.052	-0.063	0.098	1			
(11) <i>LEV</i>	-0.030	-0.032	0.015	0.077	0.072	0.015	0.033	0.038	-0.341	-0.055	1		
(12) <i>EM</i>	0.004	0.002	-0.007	-0.009	0.008	0.002	0.041	0.040	-0.002	0.036	0.028	1	
(13) <i>AGE</i>	-0.060	-0.065	-0.040	0.008	0.012	0.026	-0.111	-0.107	0.032	-0.082	0.134	0.021	1

Note: Bold indicates significance at the 10% level or better.

Regarding executive characteristics, *EG* (executive gender) is positively correlated with both crash risk measures, significant at conventional levels, indicating that firms led by male executives are associated with higher crash risk. Educational attainment, proxied by *D1* (postgraduate degree) and *D2* (bachelor's degree), shows negative correlations with crash risk, with *D1* exhibiting a stronger effect. *OE* (overseas experience) is positively correlated with crash risk but the magnitude is relatively small.

Correlations among the independent variables are generally low, with none exceeding 0.3. Further, variance inflation factor (VIF) diagnostics confirm that multicollinearity is not a serious concern in the subsequent regression analyses, with all VIF values well below the conventional threshold of five.

4.2. Univariate analysis

A univariate analysis was conducted by grouping the sample based on the executive gender (*EG*), and the results are presented in Panel A of Table 3. The mean values of both *NCSKEW* and *DUVOL* for firms led by male executives (*EG* = 1) are significantly higher (i.e., less negative) than those for firms led by female executives (*EG* = 0), with differences significant at the 5% and 10% levels, respectively. These results suggest that GEM-listed firms with male CEOs are more prone to stock price crashes compared to those led by female CEOs. This preliminary evidence supports *H1*, highlighting a significant association between executive gender and firm-level crash risk.

Table 3. Statistical analysis of the stock price crash risk of executive characteristics

Panel A: Statistical analysis of stock price crash risk of listed companies with different gender executives				
Variables	Sub-group	N	Mean	T-value
NCSKEW	Female (EG = 0)	563	-0.312	-2.08**
	Male (EG = 1)	10,711	-0.265	
DUVOL	Female (EG = 0)	563	-0.234	-1.74*
	Male (EG = 1)	10,711	-0.186	
Panel B: Statistical analysis of stock price crash risk of listed companies with different educational levels				
Variables	Sub-group	N	Mean	F-value
NCSKEW	Below Bachelor (D1 = 0, D2 = 0)	1,010	-0.221	6.32***
	Bachelor Degree (D1 = 0, D2 = 1)	5,645	-0.277	
	Postgraduate Degree (D1 = 0, D2 = 1)	4,619	-0.312	
DUVOL	Below Bachelor (D1 = 0, D2 = 0)	1,010	-0.179	4.79***
	Bachelor Degree (D1 = 0, D2 = 1)	5,645	-0.205	
	Postgraduate Degree (D1 = 0, D2 = 1)	4,619	-0.225	
Panel C: Statistical analysis of stock price crash risk of listed companies with different overseas background experiences				
Variables	Sub-group	N	Mean	T-value
NCSKEW	No (OE = 0)	11,053	-0.270	1.66*
	Yes (OE = 1)	221	-0.241	
DUVOL	No (OE = 0)	11,053	-0.193	1.58
	Yes (OE = 1)	221	-0.162	

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

To further examine the impact of executive education on crash risk, the sample was classified into three groups based on the combination of *D1* (postgraduate degree) and *D2* (bachelor's degree). As reported in Panel B of Table 3, firms led by executives without higher education qualifications

(neither a bachelor's nor a postgraduate degree) exhibit the highest average crash risk, while those led by postgraduate-educated executives show the lowest. The differences across groups are statistically significant at the 1% level based on F-statistics. These results suggest a negative

relationship between executive education and crash risk, indicating that better-educated executives may be more prudent in information disclosure and risk management.

Finally, the association between overseas experience (*OE*) and crash risk is analyzed. Panel C of Table 3 shows that firms with CEOs who have overseas experience (*OE* = 1) exhibit higher (less negative) average values of *NCSKEW* and *DUVOL* compared to those without such experience. The differences are significant at the 10% level.

Contrary to expectations, this finding suggests that overseas experience does not necessarily enhance managerial prudence or transparency in GEM-listed firms and may even be associated with elevated crash risk.

4.3. Baseline models

Table 4 presents the baseline regression results examining the association between executive characteristics and stock price crash risk.

Table 4. Baseline regression results

Variables	Coefficient (Std. error)	
	<i>NCSKEW</i>	<i>DUVOL</i>
Panel A: Impact of gender on stock price crash risk		
<i>EG</i>	0.042** (0.020)	0.037* (0.021)
<i>AW</i>	-0.215*** (0.038)	-0.132*** (0.034)
<i>SW</i>	1.283*** (0.298)	0.896*** (0.254)
<i>SIZE</i>	-0.054*** (0.010)	-0.039** (0.011)
<i>ROA</i>	-0.089*** (0.022)	-0.070*** (0.019)
<i>LEV</i>	0.061** (0.025)	0.052* (0.028)
<i>EM</i>	0.035* (0.019)	0.029 (0.018)
<i>AGE</i>	-0.012* (0.007)	-0.010 (0.006)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
<i>N</i>	11,274	11,274
Adjusted R ²	0.098	0.087
Panel B: Impact of educational level on stock price crash risk		
<i>D1</i>	-0.061*** (0.016)	-0.052*** (0.017)
<i>D2</i>	-0.043** (0.019)	-0.037** (0.018)
<i>AW</i>	-0.207*** (0.037)	-0.127*** (0.033)
<i>SW</i>	1.249*** (0.296)	0.879*** (0.252)
<i>SIZE</i>	-0.057*** (0.010)	-0.041** (0.011)
<i>ROA</i>	-0.091*** (0.022)	-0.072*** (0.018)
<i>LEV</i>	0.064** (0.024)	0.055* (0.028)
<i>EM</i>	0.032* (0.019)	0.027 (0.018)
<i>AGE</i>	-0.014* (0.007)	-0.012 (0.006)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
<i>N</i>	11,274	11,274
Adjusted R ²	0.105	0.091
Panel C: Impact of overseas background on stock price crash risk		
<i>OE</i>	0.031* (0.017)	0.028 (0.018)
<i>AW</i>	-0.210*** (0.037)	-0.125*** (0.033)
<i>SW</i>	1.276*** (0.297)	0.888*** (0.253)
<i>SIZE</i>	-0.056*** (0.010)	-0.040** (0.011)
<i>ROA</i>	-0.090*** (0.021)	-0.071*** (0.019)
<i>LEV</i>	0.062** (0.024)	0.053* (0.028)
<i>EM</i>	0.034* (0.019)	0.028 (0.018)
<i>AGE</i>	-0.013* (0.007)	-0.011 (0.006)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
<i>N</i>	11,274	11,274
Adjusted R ²	0.097	0.085

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Panel A of Table 4 reports the results for executive gender (*EG*). The coefficient on *EG* is positive and statistically significant at the 5% level for *NCSKEW* and at the 10% level for *DUVOL*, suggesting that firms led by male executives are more likely to experience stock price crashes. This finding is consistent with the univariate analysis and supports *H1*, indicating that executive gender plays a critical role in shaping firm-level information transparency and crash risk.

Panel B of Table 4 explores the impact of executive education level. The coefficients on *D1* (postgraduate degree) are negative and statistically significant at the 1% level across both *NCSKEW* and *DUVOL*, implying that firms with postgraduate-educated executives are associated with lower crash risk relative to the baseline group (executives without higher education). Similarly, the coefficients on *D2* (bachelor's degree) are also negative and significant at the 5% level. These results suggest a clear downward trend in crash risk as the level of executive education increases, providing strong support for *H2* and aligning with the notion that higher education enhances executives' ability to manage and disclose information prudently.

Panel C of Table 4 investigates the relationship between executives' overseas experience (*OE*) and stock price crash risk. The coefficients on *OE* are positive and statistically significant at the 10% level for *NCSKEW*, while the coefficients for *DUVOL* are positive but not statistically significant. These results suggest that executives with overseas backgrounds are associated with higher, rather than lower, stock price crash risk. This finding contradicts *H3*, which posits that international experience should mitigate crash risk by enhancing managerial prudence and disclosure practices. A possible explanation is that executives with overseas exposure may adopt more aggressive risk-taking behaviors or face challenges in adapting international managerial styles to the local GEM market environment.

Across all models, control variables exhibit expected signs. Firm size (*SIZE*) and profitability (*ROA*) are negatively associated with crash risk, while leverage (*LEV*) and earnings management (*EM*) are positively associated. The coefficients on stock return volatility (*SW*) are positive and highly significant, reinforcing the link between return volatility and crash risk. All regressions include year and industry fixed effects, and the adjusted R^2 values range from 8.5% to 10.5%, consistent with prior studies on crash risk in emerging markets.

4.4. Robustness checks

To ensure the robustness of the baseline findings, several additional analyses were conducted. First, we employed an alternative measure of stock price crash risk. Following Kim et al. (2011) and Hutton et al. (2009), we constructed a crash risk dummy variable (*CRASH*) that equals one if a firm experiences one or more crash weeks during a fiscal year, and zero otherwise. A crash week is defined as a week in which the firm-specific weekly return falls 3.2 standard deviations below the firm's mean return. Logistic regression models were estimated using *CRASH* as the dependent variable. The results indicate that the coefficient on executive gender (*EG*) remains positive and statistically significant at the 5% level, with an odds ratio of approximately 1.19, suggesting that male executives

increase the odds of a crash event by 19%. Similarly, the coefficients on executive education variables (*D1* and *D2*) are negative and significant at the 1% and 5% levels, respectively, consistent with the baseline results based on *NCSKEW* and *DUVOL*.

Second, to address potential concerns regarding model specification, we re-estimated the baseline models using firm fixed-effects regressions to control for unobservable firm-specific heterogeneity. The coefficients on *EG* and *D1* remain significant at conventional levels, with magnitudes slightly attenuated but consistent in direction. For example, the coefficient on *EG* decreases from 0.042 to 0.036 but remains significant at the 5% level, indicating that gender-related effects are not driven by time-invariant firm characteristics.

Lastly, to further validate the executive characteristic proxies, we included additional variables, such as CEO tenure, as controls. The inclusion of these variables did not materially alter the main results. Specifically, the coefficient on *EG* remains at 0.041 ($p < 0.05$), and the coefficient on *D1* remains at -0.059 ($p < 0.01$), suggesting that the relationships are robust to alternative specifications and are not driven by omitted executive-specific factors.

4.5. Mitigating endogeneity concerns

To address potential endogeneity concerns in the relationship between executive characteristics and stock price crash risk, this study employs the Heckman two-stage regression approach. Endogeneity may arise due to sample selection bias, particularly in the appointment of executives with specific attributes such as gender, education level, or overseas experience, which may not be random but influenced by firm- or environment-specific factors.

In the first stage, following Kim et al. (2024), a selection model is estimated to capture the probability that a firm appoints a male executive. The selection equation includes instrumental variables that are theoretically related to executive appointments but are unlikely to directly affect stock price crash risk. Specifically, we incorporate measures of the institutional environment (e.g., local government transparency index), firm-specific risk exposure (e.g., revenue volatility), and external governance mechanisms (e.g., Big 4 auditor indicator) as instruments. These variables are selected based on prior literature suggesting that regulatory quality, risk management considerations, and external auditing practices influence executive selection decisions but are exogenous to stock price crash risk conditional on executive characteristics.

The second stage involves estimating the main crash risk regression models, incorporating the inverse Mills ratio (IMR) derived from the first-stage probit model to correct for potential sample selection bias. As reported in Table 5, the estimated coefficients on executive gender (*EG*) remain positive and significant at the 5% level, with the magnitude slightly reduced from 0.042 to 0.037 after correction, indicating that endogeneity bias is not driving the baseline findings. Similarly, the coefficients on postgraduate education (*D1*) remain significantly negative at the 1% level, while the coefficients on overseas experience (*OE*) stay positive and significant at the 10% level. The IMR term is statistically significant at the 5% level in all models, confirming the presence of sample selection effects.

Table 5. Heckman estimation results

Panel A: Impact of gender on stock price crash risk		
Variables	Coefficient (Std. error)	
	NCSKEW	DUVOL
EG	0.037** (0.019)	0.034* (0.020)
AW	-0.208*** (0.036)	-0.128*** (0.032)
SW	1.271*** (0.295)	0.891*** (0.251)
SIZE	-0.053*** (0.010)	-0.038** (0.011)
ROA	-0.088*** (0.022)	-0.069*** (0.018)
LEV	0.060** (0.024)	0.051* (0.028)
EM	0.033* (0.019)	0.028 (0.018)
AGE	-0.012* (0.007)	-0.009 (0.006)
IMR	-0.084** (0.041)	-0.072** (0.038)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	11,274	11,274
Adjusted R ²	0.100	0.088
Panel B: Impact of educational level on stock price crash risk		
D1	-0.059*** (0.016)	-0.051*** (0.017)
D2	-0.041** (0.018)	-0.036** (0.017)
AW	-0.201*** (0.036)	-0.125*** (0.032)
SW	1.237*** (0.294)	0.875*** (0.250)
SIZE	-0.056*** (0.010)	-0.041** (0.011)
ROA	-0.089*** (0.022)	-0.071*** (0.018)
LEV	0.062** (0.024)	0.054* (0.028)
EM	0.031* (0.019)	0.027 (0.018)
AGE	-0.013* (0.007)	-0.011 (0.006)
IMR	-0.081** (0.039)	-0.068** (0.037)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	11,274	11,274
Adjusted R ²	0.104	0.090
Panel C: Impact of overseas background on stock price crash risk		
OE	0.030* (0.017)	0.027 (0.018)
AW	-0.203*** (0.036)	-0.126*** (0.032)
SW	1.260*** (0.296)	0.882*** (0.252)
SIZE	-0.055*** (0.010)	-0.039** (0.011)
ROA	-0.088*** (0.021)	-0.070*** (0.018)
LEV	0.061** (0.024)	0.053* (0.028)
EM	0.033* (0.019)	0.028 (0.018)
AGE	-0.012* (0.007)	-0.010 (0.006)
IMR	-0.079** (0.038)	-0.066** (0.036)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	11,274	11,274
Adjusted R ²	0.098	0.087

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Overall, the Heckman two-stage approach provides a robust framework to mitigate endogeneity concerns and strengthens the causal interpretation of the results.

4.6. Additional tests

To further validate the robustness and generalizability of the main findings, we conducted several additional tests. First, we performed subsample analyses by partitioning the sample

based on firm size and profitability. Firms were divided into high and low groups using the median values of total assets and *ROA*, respectively. In the smaller firm subsample (below median total assets), the coefficient on executive gender (*EG*) increases to 0.058 and is significant at the 1% level, whereas in larger firms, the coefficient becomes statistically insignificant. This suggests that the effect of executive gender on crash risk is more pronounced in smaller firms, consistent with the notion that governance quality and internal monitoring are weaker in small firms (Claessens et al., 2000).

Similarly, the negative impact of executive education on crash risk is amplified among firms with lower profitability. In the low-*ROA* subsample, the coefficient on *D1* reaches -0.073 and is significant at the 1% level, compared to a smaller and statistically weaker effect in high-*ROA* firms. These findings align with the view that better-educated executives play a more critical role in mitigating crash risk in financially constrained or underperforming firms (Hambrick & Mason, 1984).

Second, we explore heterogeneity across firms with different growth opportunities. Firms were classified into high and low growth groups based on the median market-to-book ratio (*MB*). The results indicate that the positive association between male executives and crash risk is stronger among high-growth firms, where information asymmetry is typically higher (Jin & Myers, 2006). The mitigating effect of executive education also remains significant in high-growth firms, further highlighting the role of managerial quality in firms facing greater market scrutiny and valuation uncertainty.

Third, to test whether the volatility environment affects the main results, we conducted additional subsample analyses based on return volatility. Firms were split into high- and low-volatility groups based on the standard deviation of weekly returns. The results are consistent with prior findings: the impact of executive gender and education on crash risk is more pronounced in the high-volatility subsample, supporting the argument that executive traits are more influential in firms exposed to greater market risk (French et al., 1987).

Overall, these additional tests confirm that the effects of executive characteristics on stock price crash risk are not uniform across firms. Instead, they are stronger in firms with weaker governance structures, higher information asymmetry, and greater volatility, reinforcing the critical role of top management traits in shaping crash risk outcomes.

5. DISCUSSION

This study examines the influence of executive characteristics on stock price crash risk in the context of China's GEM. Our findings offer several important insights that not only align with but also extend prior research on behavioral corporate governance and crash risk.

First, we document that male executives are associated with significantly higher stock price crash risk. This finding is consistent with the behavioral perspective that male leaders are generally more prone to risk-taking and overconfident decision-making (Faccio et al., 2016; Bertrand & Schoar, 2003). It corroborates earlier evidence suggesting that gender diversity enhances governance quality and reduces firm risk exposure (Francis et al., 2015; Wang & Fung, 2022). However, our study extends

this line of inquiry by showing that the gender effect remains significant even after controlling for firm-specific factors and correcting for endogeneity through Heckman two-stage regressions. Importantly, by focusing on an emerging market setting characterized by higher information asymmetry and weaker investor protections (Claessens et al., 2000; Morck et al., 2000), our results suggest that executive gender differences may have amplified effects in less mature market environments compared to developed markets where formal governance institutions are more robust.

Second, we find that higher executive education levels, particularly postgraduate degrees, are associated with a lower likelihood of stock price crashes. This result aligns with prior studies highlighting that education enhances cognitive capabilities, ethical standards, and strategic foresight, which improve information transparency and reduce managerial opportunism (Hambrick & Mason, 1984; Zhou et al., 2013). Our findings extend this literature by demonstrating that the beneficial impact of executive education persists in the high-volatility, innovation-driven GEM market, thereby reinforcing the argument that executive human capital is crucial for enhancing governance outcomes in contexts where external monitoring is limited (Saidu, 2019; Lin et al., 2018).

Third, contrary to conventional expectations, we observe that executives with overseas experience are associated with higher crash risk. Previous studies suggest that international exposure equips executives with better governance practices and a stronger commitment to transparency (Dai & Liu, 2009; Xu & Hou, 2021). Our divergent finding implies that the benefits of overseas experience may not be universally transferable to emerging market contexts like the GEM. Possible explanations include misalignment between internationally acquired management styles and local institutional realities, or overestimation of governance standards derived from developed markets, leading to ineffective adaptation. This challenges the assumption that global exposure uniformly strengthens managerial prudence and suggests the need for a more nuanced understanding of how international experience interacts with local governance structures (Giannetti et al., 2015; Habib et al., 2017).

Moreover, the additional tests conducted reinforce the robustness of our findings across different firm subsamples. The stronger effects observed among smaller firms, low-profitability firms, and high-growth firms highlight that executive traits exert a more pronounced influence where internal governance mechanisms are weaker or information asymmetry is higher (Claessens et al., 2000; Jin & Myers, 2006). This supports the broader view in the governance literature that individual-level heterogeneity plays a critical role under conditions of institutional voids and market imperfections (Cao et al., 2016).

Collectively, our findings contribute to the behavioral corporate governance literature by shifting the focus from commonly studied traits such as CEO overconfidence (Malmendier & Tate, 2008; Kim et al., 2016) to a broader set of executive characteristics (gender, education, and international experience) and by situating the analysis in a unique emerging market context. This dual expansion — both in terms of variables considered and the institutional environment analyzed — enhances the understanding of how personal traits of top executives shape firm-level risk dynamics.

6. CONCLUSION

This study investigates how executive characteristics, including gender, educational background, and overseas experience, affect stock price crash risk among firms listed on China's GEM. Drawing on a comprehensive dataset spanning 2009 to 2023, we provide empirical evidence that executive traits are significant predictors of firm-level crash risk, even after accounting for firm-specific factors and potential endogeneity.

This study offers practical insights for corporate boards, investors, and regulators. Assessing executive profiles beyond conventional financial metrics may enhance the ability to identify firms susceptible to future crash events, particularly in rapidly evolving market environments like the GEM.

Nevertheless, several limitations should be acknowledged. The study primarily relies on observable executive characteristics and does not

capture more nuanced psychological traits such as risk aversion or ethical orientation. In addition, while the Heckman two-stage model mitigates endogeneity concerns, unobserved heterogeneity may still pose challenges to causal inference.

Future research could extend this line of inquiry in several directions. First, the binary coding of overseas experience used in this study combines both educational and professional exposure. Disaggregating these dimensions, especially distinguishing between general overseas work experience and top-management-level international roles, may uncover more refined behavioral channels. Second, future work could explore the dynamic evolution of executive profiles and how these changes influence risk outcomes over time. Finally, experimental or quasi-experimental designs may offer stronger causal identification to validate the mechanisms proposed.

REFERENCES

- Aktas, N., de Bodt, E., Bollaert, H., & Roll, R. (2016). CEO narcissism and the takeover process: From private initiation to deal completion. *Journal of Financial and Quantitative Analysis*, 51(1), 113–137. <https://doi.org/10.1017/S0022109016000065>
- An, Z., Chen, C., Naiker, V., & Wang, J. (2020). Does media coverage deter firms from withholding bad news? Evidence from stock price crash risk. *Journal of Corporate Finance*, 64, Article 101664. <https://doi.org/10.1016/j.jcorpfin.2020.101664>
- Andreou, P. C., Antoniou, C., Horton, J., & Louca, C. (2016). Corporate governance and firm-specific stock price crashes. *European Financial Management*, 22(5), 916–956. <https://doi.org/10.1111/eufm.12084>
- Bertrand, M., & Schoar, A. (2003). Managing with style: The effect of managers on firm policies. *The Quarterly Journal of Economics*, 118(4), 1169–1208. <https://doi.org/10.1162/003355303322552775>
- Blanchard, E., Kandel, E., & Veronesi, P. (2010). Stock-based compensation and CEO (dis)incentives. *The Quarterly Journal of Economics*, 125(4), 1769–1820. <https://doi.org/10.1162/qjec.2010.125.4.1769>
- Bleck, A., & Liu, X. (2007). Market transparency and the accounting regime. *Journal of Accounting Research*, 45(2), 229–256. <https://doi.org/10.1111/j.1475-679X.2007.00231.x>
- Callen, J. L., & Fang, X. (2015). Short interest and stock price crash risk. *Journal of Banking & Finance*, 60, 181–194. <https://doi.org/10.1016/j.jbankfin.2015.08.009>
- Cao, C., Xia, C., & Chan, K. C. (2016). Social trust and stock price crash risk: Evidence from China. *International Review of Economics & Finance*, 46, 148–165. <https://doi.org/10.1016/j.iref.2016.09.003>
- Cao, H. H., Coval, J. D., & Hirshleifer, D. (2002). Sidelined investors, trading-generated news, and security returns. *The Review of Financial Studies*, 15(2), 615–648. <https://doi.org/10.1093/rfs/15.2.615>
- Chen, J., Hong, H., & Stein, J. C. (2001). Forecasting crashes: Trading volume, past returns, and conditional skewness in stock prices. *Journal of Financial Economics*, 61(3), 345–381. [https://doi.org/10.1016/S0304-405X\(01\)00066-6](https://doi.org/10.1016/S0304-405X(01)00066-6)
- Chen, Y., Fan, Q., Yang, X., & Zolotoy, L. (2021). CEO early-life disaster experience and stock price crash risk. *Journal of Corporate Finance*, 68, Article 101928. <https://doi.org/10.1016/j.jcorpfin.2021.101928>
- Claessens, S., Djankov, S., & Lang, L. H. P. (2000). The separation of ownership and control in East Asian corporations. *Journal of Financial Economics*, 58(1–2), 81–112. [https://doi.org/10.1016/S0304-405X\(00\)00067-2](https://doi.org/10.1016/S0304-405X(00)00067-2)
- Dai, O., & Liu, X. (2009). Returnee entrepreneurs and firm performance in Chinese high-technology industries. *International Business Review*, 18(4), 373–386. <https://doi.org/10.1016/j.ibusrev.2009.03.004>
- Dimson, E. (1979). Risk measurement when shares are subject to infrequent trading. *Journal of Financial Economics*, 7(2), 197–226. [https://doi.org/10.1016/0304-405X\(79\)90013-8](https://doi.org/10.1016/0304-405X(79)90013-8)
- Easterbrook, F. H. (1984). Two agency-cost explanations of dividends. *The American Economic Review*, 74(4), 650–659. <https://www.jstor.org/stable/1805130>
- Faccio, M., Marchica, M.-T., & Mura, R. (2016). CEO gender, corporate risk-taking, and the efficiency of capital allocation. *Journal of Corporate Finance*, 39, 193–209. <https://doi.org/10.1016/j.jcorpfin.2016.02.008>
- Francis, B., Hasan, I., & Wu, Q. (2015). Professors in the boardroom and their impact on corporate governance and firm performance. *Financial Management*, 44(3), 547–581. <https://doi.org/10.1111/fima.12069>
- French, K. R., Schwert, G. W., & Stambaugh, R. F. (1987). Expected stock returns and volatility. *Journal of Financial Economics*, 19(1), 3–29. [https://doi.org/10.1016/0304-405X\(87\)90026-2](https://doi.org/10.1016/0304-405X(87)90026-2)
- Giannetti, M., Liao, G., & Yu, X. (2015). The brain gain of corporate boards: Evidence from China. *The Journal of Finance*, 70(4), 1629–1682. <https://doi.org/10.1111/jofi.12198>
- Gong, Y., Wilson, M., & Zhang, L. (2025). Shocks to CEO political alignment and corporate social responsibility: Evidence from the 2008 and 2016 presidential elections. *The International Journal of Accounting*. <https://doi.org/10.1142/S1094406024400043>
- Gull, A. A., Abid, A., Nguyen, D. K., Usman, M., & Mushtaq, R. (2025). Stock price crash and information environment: Do CEO gender and financial expertise matter? *Review of Quantitative Finance and Accounting*, 65, 219–255. <https://doi.org/10.1007/s11156-024-01244-w>
- Habib, A., Hasan, M. M., & Jiang, H. (2017). Stock price crash risk: Review of the empirical literature. *Accounting & Finance*, 58(S1), 211–251. <https://doi.org/10.1111/acfi.12278>
- Hambrick, D. C. (1997). Corporate coherence and the top management team. *Strategy & Leadership*, 25(5), 24–29. <https://doi.org/10.1108/eb054597>

- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *The Academy of Management Review*, 9(2), 193–206. <https://doi.org/10.2307/258434>
- Hong, H., & Stein, J. C. (2003). Differences of opinion, short-sales constraints and market crashes. *The Review of Financial Studies*, 16(2), 487–525. <https://doi.org/10.1093/rfs/hhg006>
- Hutton, A. P., Marcus, A. J., & Tehranian, H. (2009). Opaque financial reports, R², and crash risk. *Journal of Financial Economics*, 94(1), 67–86. <https://doi.org/10.1016/j.jfineco.2008.10.003>
- Jin, L., & Myers, S. C. (2006). R² around the world: New theory and new tests. *Journal of Financial Economics*, 79(2), 257–292. <https://doi.org/10.1016/j.jfineco.2004.11.003>
- Kim, J.-B., Li, Y., & Zhang, L. (2011). CFOs versus CEOs: Equity incentives and crashes. *Journal of Financial Economics*, 101(3), 713–730. <https://doi.org/10.1016/j.jfineco.2011.03.013>
- Kim, J.-B., Tseng, K., Wang, J., & Xi, Y. (2024). Policy uncertainty, bad news disclosure, and stock price crash risk. *Journal of Empirical Finance*, 78, 101512. <https://doi.org/10.1016/j.jempfin.2024.101512>
- Kim, J.-B., Wang, Z., & Zhang, L. (2016). CEO overconfidence and stock price crash risk. *Contemporary Accounting Research*, 33(4), 1720–1749. <https://doi.org/10.1111/1911-3846.12217>
- Kim, M., Kim, S., & Kim, W. (2023). *Outside director tenure limit: Expertise-enhancement versus entrenchment* (Finance Working Paper No. 878/2023). European Corporate Governance Institute (ECGI). https://www.ecgi.global/sites/default/files/working_papers/documents/director.pdf
- Knight, D., Pearce, C. L., Smith, K. G., Olian, J. D., Sims, H. P., Smith, K. A., & Flood, P. (1999). Top management team diversity, group process, and strategic consensus. *Strategic Management Journal*, 20(5), 445–465. [https://doi.org/10.1002/\(SICI\)1097-0266\(199905\)20:5<445::AID-SMJ27>3.0.CO;2-V](https://doi.org/10.1002/(SICI)1097-0266(199905)20:5<445::AID-SMJ27>3.0.CO;2-V)
- Li, W., Gong, Y., Zhang, Y., & Li, F. (2025). Derivative complexity and the stock price crash risk: Evidence from China. *International Journal of Financial Studies*, 13(2), Article 94. <https://doi.org/10.3390/ijfs13020094>
- Liang, S., Jiang, Y., Yu, J., & Xu, W. (2021). Large shareholders' tunneling and stock price crash risk. *China Journal of Accounting Studies*, 9(4), 469–489. <https://doi.org/10.1080/101697213.2022.2082717>
- Lin, T., Hu, X., & Niu, X. (2018). Empirical research on the impact of TMT's characteristics on investment efficiency in China's listed companies — Based on the moderating effect of equity incentive. *Frontiers of International Accounting*, 7(2), 28–38. <https://doi.org/10.12677/fia.2018.72004>
- Luo, Y., & Ren, J. (2016, June 26–28). *Short sale, margin purchase, and stock price crash risk* [Paper presentation]. 2016 Asian Finance Association Annual Meeting, Bangkok, Thailand. <https://doi.org/10.2139/ssrn.2725776>
- Malmendier, U., & Tate, G. (2008). Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, 89(1), 20–43. <https://doi.org/10.1016/j.jfineco.2007.07.002>
- Morck, R., Yeung, B., & Yu, W. (2000). The information content of stock markets: Why do emerging markets have synchronous stock price movements? *Journal of Financial Economics*, 58(1–2), 215–260. [https://doi.org/10.1016/S0304-405X\(00\)00071-4](https://doi.org/10.1016/S0304-405X(00)00071-4)
- Peng, W. Q., & Wei, K. C. J. (2007). *Women executives and corporate investment: Evidence from the S&P 1500*. <https://doi.org/10.2139/ssrn.970543>
- Pham, T. T., Bui, T. M. D., Nguyen, T. M., Nguyen, T. K. O., & Nguyen, P. M. U. (2025). The impact of female leadership on the stock price crash risk of non-financial firms. *Risk Governance and Control: Financial Markets & Institutions*, 15(2), 31–42. <https://doi.org/10.22495/rgcv15i2p3>
- Rahman, M. J., & Chen, X. (2023). CEO characteristics and firm performance: Evidence from private listed firms in China. *Corporate Governance*, 23(3), 458–477. <https://doi.org/10.1108/CG-01-2022-0004>
- Saidu, S. (2019). CEO characteristics and firm performance: Focus on origin, education and ownership. *Journal of Global Entrepreneurship Research*, 9, Article 29. <https://doi.org/10.1186/s40497-019-0153-7>
- Santoso, A., & Setiawan, D. (2024). CEO characteristics and water disclosure: Multi-country evidence. *Sustainable Futures*, 8, Article 100322. <https://doi.org/10.1016/j.sftr.2024.100322>
- Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy*, 94(3, Part 1), 461–488. <https://doi.org/10.1086/261385>
- Tang, C.-H., Lee, Y.-H., Hsiao, M.-C., & Liu, H.-C. (2024). Exploring the impact of ESG components, CEO characteristics, and organizational themes on downside risk: Insights from Chinese firms. *Finance Research Letters*, 61, Article 105048. <https://doi.org/10.1016/j.frl.2023.105048>
- Tang, Y., Xu, J., & Zhang, X. (2017). China's investment and rate of return on capital revisited. *Journal of Asian Economics*, 49, 12–25. <https://doi.org/10.1016/j.asieco.2017.02.003>
- Wang, L.-H., & Fung, H.-G. (2022). The effect of female CEO and CFO on tail risk and firm value. *Finance Research Letters*, 47(Part B), Article 102693. <https://doi.org/10.1016/j.frl.2022.102693>
- Wang, Z., Xie, Z., & Chen, C. (2022). Executives with economic management education backgrounds and stock price crash risk: Evidence from Chinese A-share markets. *Emerging Markets Finance and Trade*, 58(10), 2764–2782. <https://doi.org/10.1080/1540496X.2021.2009798>
- Xu, N., Jiang, X., Chan, K. C., & Yi, Z. (2013). Analyst coverage, optimism, and stock price crash risk: Evidence from China. *Pacific-Basin Finance Journal*, 25, 217–239. <https://doi.org/10.1016/j.pacfin.2013.09.001>
- Xu, Z., & Hou, J. (2021). Effects of CEO overseas experience on corporate social responsibility: Evidence from Chinese manufacturing listed companies. *Sustainability*, 13(10), Article 5335. <https://doi.org/10.3390/su13105335>
- Yim, S. (2013). The acquisitiveness of youth: CEO age and acquisition behavior. *Journal of Financial Economics*, 108(1), 250–273. <https://doi.org/10.1016/j.jfineco.2012.11.003>
- Zhang, S. (2025). Executive gender differences and corporate financialization: Evidence from China. *International Journal of Trade, Economics and Finance*, 16(1), 124–132. <https://www.ijtef.com/show-141-1176-1.html>
- Zheng, Y., Zheng, M., & Zhang, J. (2024). Executive educational background, corporate governance and corporate default risk. *Finance Research Letters*, 67(Part B), Article 105785. <https://doi.org/10.1016/j.frl.2024.105785>
- Zhou, J., Kim, J.-B., & Yeung, I. (2013). *Material weakness in internal control and stock price crash risk: Evidence from SOX Section 404 Disclosure*. <https://doi.org/10.2139/ssrn.2208212>
- Zou, X., Li, W., Wu, W., Hunt, A., & Lu, H. (2025). How do executives' overseas experiences reshape corporate climate risk disclosure in emerging countries? Evidence from China's listed firms. *Systems*, 13(6), Article 494. <https://doi.org/10.3390/systems13060494>

APPENDIX. VARIABLES DEFINITION

<i>Symbol</i>	<i>Description</i>
<i>Dependent variables: Measures the stock price crash risk</i>	
<i>NCSKEW</i>	Negative conditional skewness of firm-specific weekly returns over a fiscal year.
<i>DUVOL</i>	Logarithm of the down-to-up volatility ratio of firm-specific weekly returns.
<i>CRASH</i>	A dummy variable that equals one if a firm experiences 1 or more crash weeks during a given fiscal year, and 0 otherwise. A crash week is defined as a week in which the firm-specific weekly return falls at least 3.2 standard deviations below the mean firm-specific weekly return over the fiscal year.
<i>Independent variables: Executive characteristics</i>	
<i>EG</i>	Equals 1 if the CEO is male, and 0 otherwise.
<i>D1</i>	Equals 1 if the CEO holds a postgraduate degree (Master's or PhD), and 0 otherwise.
<i>D2</i>	Equals 1 if the CEO holds a bachelor's degree, and 0 otherwise.
<i>OE</i>	Equals 1 if the CEO has overseas study or work experience, and 0 otherwise.
<i>Control variables</i>	
<i>SIZE</i>	Natural logarithm of total market capitalization.
<i>ROA</i>	Return on assets, calculated as net income divided by total assets.
<i>LEV</i>	Leverage, measured as total liabilities divided by total assets.
<i>AW</i>	Average value of firm-specific weekly residual returns over the past three years.
<i>SW</i>	Standard deviation of firm-specific weekly residual returns over the past three years.
<i>EM</i>	Absolute value of discretionary accruals.
<i>AGE</i>	Natural logarithm of firm age, measured as the number of years since IPO.