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Do academic bank leaders reduce bank non-performing loans?

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ABSTRACT

This paper examines the impact of bank leaders with academic professorship on the level of bank non-performing loans. Using a hand-collected dataset of academic leaders in Chinese commercial banks from 2007 to 2020, the paper provides robust evidence that banks with professor leaders can effectively reduce the amount of non-performing loans. This negative relationship is more pronounced if the academic bank leaders are female, young, and have an overseas educational background. Overall, our findings call for the recruitment of more academic bank leaders as this may have the effect of lowering banks' risk.

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Academic leaders; bank; non-performing loans; Professor

1. Introduction

In recent years, scholarly interest in the personal characteristics of board members has intensified, particularly regarding how these traits shape governance quality and firm outcomes. Existing literature has focused extensively on attributes such as gender (Adams and Ferreira 2009), political connections (Faccio 2006), board independence (Liu, Xie, and Xu 2019), and financial expertise (Faleye, Hoitash, and Hoitash 2018), especially in relation to risk-taking behaviour and corporate performance. However, one important and relatively under-explored dimension is the academic background of directors – an oversight that is especially notable within the banking sector, where sound judgment and ethical oversight are critical.

Unlike other forms of diversity that primarily reflect demographic or identity-based variation, an academic background embodies a distinct form of human and social capital, marked by analytical discipline, ethical rigour, and broad intellectual networks (Jiang and Murphy 2007; White et al. 2014). Building on this idea, the current study examines whether bank leaders with academic backgrounds influence loan quality and risk outcomes in Chinese commercial banks.

Using a novel hand-collected dataset of Chinese banks from 2007 to 2020, the paper finds that banks with leaders holding professorships experience significantly lower levels of non-performing loans (NPLs). This effect is particularly pronounced when the academic leaders are female, relatively young, or have an overseas educational background. We also uncover two governance channels – curbing overinvestment and shareholder meeting frequency – through which academic leaders reduce credit risk. These results provide the first large-sample evidence that academic expertise in leadership roles contributes to improved bank stability.

The increasing academic focus on this governance dimension builds on earlier findings that individuals with academic backgrounds are perceived to possess high intellectual capacity (Audretsch and Stephan 1996) and are trained to think critically, independently, and rigorously (Francis, Hasan, and Wu 2015; Jiang and Murphy 2007). In addition, academics typically bring strong professional networks and social capital, which can enhance an organisation's ability to attract resources and talent, foster trust and engagement at the board level (Westphal 1999), improve board dynamics (Hwang and Kim 2009), and enhance organisational legitimacy and reputation (Singh, Terjesen, and Vinnicombe 2008). Taken together, these attributes make academics strong candidates for

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roles as board monitors and advisors. Despite these advantages, the influence of academic experience on board effectiveness, particularly in relation to credit risk, has received limited empirical scrutiny.

Thus, this paper contributes to the literature by redirecting attention to a relatively overlooked but increasingly salient director characteristic: academic background. The contribution of this study lies not only in introducing academic background as a governance variable, but also in unpacking how this effect may vary across personal characteristics such as gender, international education, and age. These dimensions are known to influence ethical reasoning, risk aversion, and reputational concerns (Cho and Kim 2017; Faccio, Marchica, and Mura 2016; Jin et al. 2022; Liu, Xie, and Xu 2019), yet their interaction with academic identity remains largely unexplored in the context of financial stability. Moreover, the paper focuses on NPLs, a key indicator of credit risk and banking stability, as the outcome variable. This offers a more direct and policy-relevant measure of board effectiveness compared to broader financial proxies like return volatility or firm value.

Methodologically and contextually, the study also breaks new ground. In particular, the paper uses a novel, hand-collected dataset of Chinese commercial banks from 2007 to 2020, a setting where academics are unusually prominent on boards due to cultural and institutional factors (Pang, Zhang, and Zhou 2020; Xiang and Zhu 2020). Applying robust econometric techniques, including system-GMM and 2SLS, the paper addresses endogeneity concerns and ensures the validity of the results. By doing so, the study contributes to the governance literature by: (i) introducing a novel lens for assessing director effectiveness; (ii) linking academic leadership to a critical risk outcome; and (iii) examining these effects in an empirically underexplored but globally important banking context. Finally, to the best of the authors' knowledge, this is the first study to empirically identify and examine two specific channels – bank overinvestment and shareholder meeting frequency – through which academic leadership helps mitigate NPLs. By integrating Upper Echelons Theory with insights on academic governance norms, the paper provides a novel theoretical framework for understanding how academic directors shape risk oversight in banking, particularly in the culturally distinctive and heavily regulated Chinese financial sector.

The focus on Chinese banks is particularly warranted due to several unique institutional features of China's banking and governance landscape. First, China exhibits a relatively high proportion of academic directors on corporate boards, more so than most other major economies (Pang, Zhang, and Zhou 2020). This creates a fertile empirical context to explore the effects of academic leadership. Second, China's banking sector operates under distinctive state influence, incomplete market mechanisms, and ongoing regulatory reforms – conditions under which governance structures like board composition may exert particularly strong effects. Third, Confucian cultural traditions emphasise intellectualism and moral leadership, making professorial backgrounds especially prestigious and influential in boardroom dynamics (Pang, Zhang, and Zhou 2020). These cultural and institutional factors make China not just a practical setting, but also a theoretically meaningful one for studying the influence of academic leadership on bank risk outcomes such as NPLs.

However, while the current study focuses on Chinese commercial banks, the mechanisms we uncover – namely, how academic leaders' critical thinking, ethical orientation, and extensive networks strengthen loan-quality monitoring – are by no means unique to China. For example, in many emerging markets, banks must contend with elevated credit risks, informational opacity, and evolving governance regimes. Appointing academics in such contexts can therefore similarly enhance evidence-based lending decisions, curb overinvestment, and improve board-shareholder dialogue. Moreover, in developed economies, where regulatory scrutiny under Basel III/IV has intensified demands for board expertise, the results of this paper suggest that academic directors could play a complementary role alongside finance specialists and independent directors, particularly in sectors that require deep technical knowledge and long-term risk assessment (e.g. small business lending, green finance).

The remainder of the paper is organised as follows. Section two discusses the underlying theories, reviews the relevant literature, and develops the hypotheses. Section three discusses data and the research model. Section four presents the empirical results and robustness checks tests. Finally, Section five concludes with implications for banking governance and policy, as well as outlining the limitations of the paper and avenues for future research.

2. Literature review

2.1. Context of the study: academic board leaders' backgrounds

In recent years, there has been growing interest in exploring board characteristics, including the background, experience, and/or expertise of board directors, and their potential influence on firm performance across a range of areas (Jeremias and Gani 2014). Significant ongoing efforts continue to focus on more traditional issues relating to financial activities, behaviours, and performance, such as cash holdings (Elamer and Utham 2024; Ullah, Jiang, and Elamer 2024; Ullah, Owusu, and Elamer 2024). At the same time, there are increasing efforts to examine newer agendas such as firm innovation and technology (Sierra-Morán et al. 2024), social and environmental responsibility (Ullah et al. 2022), ESG/sustainability performance and disclosure (Hui, Li, and Elamer 2024; Marie et al. 2024; Ullah, Jiang, and Elamer 2024; Ullah, Owusu, and Elamer 2024), and pinkwashing (Venturelli et al. 2024).

The personal values, cognitive traits, and professional experiences of top executives play a critical role in shaping organisational outcomes (Hambrick and Mason 1984). In the case of academic directors, their cognitive traits, cultivated through rigorous scholarly training, critical thinking, and evidence-based reasoning, can significantly influence how they perceive and manage risk. These individuals typically exhibit strong analytical discipline, ethical awareness, and a long-term strategic focus, which may lead to more prudent risk assessments and a stronger emphasis on compliance and accountability (Francis, Hasan, and Wu 2015). Such characteristics can help counter short-term profit-seeking behaviours and encourage more cautious lending decisions, thereby reducing the likelihood of NPLs. Furthermore, their experience with complex problem-solving and peer review processes may enhance board deliberations and risk oversight. Rather than introducing cognitive bias, the cognitive style of academic directors may act as a stabilising force that strengthens risk management and supports loan portfolio quality.

Positioned between these traditional topics and emerging agendas, the current study investigates the influence of academic directors on firm risk-taking, contributing to recent efforts that explore the role of independent directors in managerial risk-taking (Owusu et al. 2023). As noted earlier, the role and characteristics of academic leaders have received increasing attention in recent years (Francis, Hasan, and Wu 2015; White et al. 2014). Existing literature has examined the presence of academic directors in various corporate contexts, including listed firms (Khan et al. 2022; Xiang and Zhu 2020), Fortune 500 companies (Peterson and Philpot 2009), and sector-specific settings such as healthcare (Anderson, Good, and Gellad 2015) and the energy industry (Gardazi, Hassan, and Johari 2020). Prior evidence suggests that the presence of academic directors – for example, on hospital boards – is associated with higher-quality services (Jones and Fulop 2021) and stronger commitments to reducing carbon footprints (Gardazi, Hassan, and Johari 2020). This study focuses on the dynamic banking sector in China and examines the impact of academic directors on bank risk-taking behaviour.

An academic background may be particularly attractive to banks as academics in general are considered to possess a high intellectual capacity (Audretsch and Stephan 1996), and are trained to think critically and independently (Francis, Hasan, and Wu 2015; Jiang and Murphy 2007). Their research activities enable them to provide firms with up-to-date scientific knowledge or management insights (Audretsch and Lehmann 2006). In addition, their research network and strong social connections are beneficial to firms in terms of attracting talent and resources, enhancing trust and board involvement (Westphal 1999), and improving board dynamics (Hwang and Kim 2009) and firm reputation (Singh, Terjesen, and Vinnicombe 2008).

Such characteristics, and the heterogeneity of academics, make them favoured monitors and advisors; thus, there is a relatively high presence of academic directors across various jurisdictions (Chen, Garel, and Tourani-Rad 2019; Chen et al. 2019; Francis, Hasan, and Wu 2015; Quan and Li 2017). Appointing academics as directors is now a popular option in the Chinese market; between 2007 and 2017, 47.6% of the independent directors on the board of Chinese firms had an academic background (Xiang and Zhu 2020) and this constitutes the most prevalent characteristic among the three main types of backgrounds (that is, political, academic and financial) (Liu 2020) that independent directors in China possessed (Khan et al. 2022; Wang 2020). This situation might be a result of government intervention that prohibits the appointment of public servants[1]; in addition, the historical

and cultural background of Confucianism is also considered to have contributed to the preference of academic directors (Pang, Zhang, and Zhou 2020).

In addition to their individual attributes, it is important to consider whether academics are systematically different from other types of board members in fulfilling governance roles. Compared to financially trained directors or industry experts, academic directors are typically less involved in operational decision-making but contribute through analytical rigour, independence of thought, and a commitment to ethical standards grounded in academic norms. Unlike political appointees, whose influence may be geographically or administratively constrained, academic directors often possess broader, cross-sectoral networks and are less susceptible to political or commercial pressure. Their governance approach tends to emphasise evidence-based reasoning, long-term thinking, and reputational considerations linked to their scholarly standing (Jin, Su, Wang, and Xiao 2022). These characteristics may make academics particularly effective in enhancing board deliberation and risk oversight, especially in highly regulated sectors such as banking.

In summary, existing literature has examined directors from a range of professional backgrounds, including political (Goldman, Rocholl, and So 2008; Shi, Xu, and Zhang 2018), financial (Ghosh 2016), industrial (Faleye, Hoitash, and Hoitash 2018), and academic (Francis, Hasan, and Wu 2015) domains. This paper argues that academic directors possess a unique combination of attributes that set them apart. These include high ethical standards shaped by rigorous academic training, expansive networks that extend beyond geographic boundaries, unlike the more localised networks of political directors, and deep, up-to-date, cross-sectoral knowledge that may exceed that of financial experts. The paper suggests that these distinctive qualities make academic directors particularly valuable to bank boards, enhancing their ability to manage risk and reduce NPLs.

2.2. Theoretical framing

An established body of prior literature in organisational theory (Hill 1995; Useem 1979), demonstrates that directors from diverse backgrounds possess different knowledge, experiences, beliefs, and workplace norms (Kotha, George, and Srikanth 2013). These differences shape directors' varying understandings of their roles and responsibilities on corporate boards. This paper draws on human and social capital theory and Upper Echelons theory to develop the theoretical framing that underpins the current exploration of the impact of professor directors on the level of banks' NPLs.[2]

2.2.1. Theory of human and social capital

There is a large body of research that seeks a theoretical explanation of what makes a particular leader candidate attractive to a firm. The extant theory has moved from the proposition that companies need 'resource-rich' directors (Boyd 1990), or directors from particular professions such as finance (Mizruchi and Stearns 1994), to a more comprehensive notion that directors' human and social capital is crucial in resource provision to a board. This literature has facilitated a more detailed understanding of what distinguishes one director candidate from another; specifically, this body of research emphasises the usefulness of utilising human and social capital theory to explore the various dynamics involved in boards of directors (Lester et al. 2008). Human capital refers to the experience, expertise, knowledge, and skills that an individual possesses (Becker 1918), whilst social capital is seen as the actual and/or potential resource '… embedded within, available through, and derived from the network of relationships possessed by that individual' (Nahapiet and Ghoshal 1998, 243).

Previous studies have highlighted the value of having employees and/or directors from specific backgrounds based on the human and social capital these directors possess. For instance, there is evidence that having star scientists in the employee team effectively boosts innovation (Kaiser et al. 2018). At the corporate board level, it has been suggested that aspects of directors' human and social capital such as education, finance, and technical experience significantly influences a firm's Research and Development (R&D) expenditure (Dalziel, Gentry, and Bowerman 2011). For example, a recent study by Li et al. (2022) found that, in China, academy fellow[3] directors play an important role in shaping corporate direction and strategy to facilitate innovation. Research has also demonstrated that the human and social capital of political directors (that is, government officials on boards) results in better financial performance by providing a source of valuable advice and counsel regarding the public policy environment and legitimacy (Hillman 2005). Furthermore, Lester et al. (2008) studied government official

directors and suggested that either the depth or breadth of human and social capital identified in government officials should be generalisable to directors from other professions.

According to the above, this paper contends that academic directors provide the boards of banks with valuable human and social capital that shapes and facilitates banks' risk management and, thus, controls the NPL level. On one hand, professors possess the most desirable human capital (Li et al. 2022); they accumulate a wide and solid knowledge base throughout their long-term research journey, retaining the most authoritative expertise and up-to-date techniques in their field, and they usually keep up-to-date with the latest industry trends and policy directions through their academic activities (Chen, Garel, and Tourani-Rad 2019; Chen et al. 2019; Jin et al. 2022). These qualities, which are derived from their human capital, enable them to provide relatively more informative judgments in identifying potential troubled/bad loans when sitting on the board of banks.

On the other hand, professors come with rich social capital, including their wide network, interpersonal connections, excellent track record, and general reputation (Francis, Hasan, and Wu 2015; White et al. 2014), which brings to the board a wide range of social resources and potential advantages. In China, university professors tend to cultivate close relationships with influential actors in both industry and governmental sectors through their research networks, which frequently rely on personal connections established via fieldwork, ethnographic engagement, or other participatory research activities. These key profiles play a crucial role in shaping major national and local economic agendas, influencing business developments, and scientific advancements (Li et al. 2022). Their presence on corporate boards facilitates personnel exchange and is considered a vital mechanism for linking organisations and shaping business practices (Boeker 1997). Therefore, the current study upholds that banks will benefit from professor directors' rich social capital; professors provide the boards with unique network and connections so that banks have more access to high-quality business resources, which might result in fewer NPLs.

Taken together, the interaction between the two key advantages of having academic directors on bank boards – namely, their human and social capital – provides significant benefits. Banks gain access to broad, multi-regional, and cross-sectoral networks, along with a robust and up-to-date base of policy and industry expertise. These combined strengths enhance banks' ability to access both public and private information, identify potential risks, and apply expert analytical skills to process this information effectively. As a result, banks are better equipped to make timely, well-informed decisions that mitigate risk. This synergy between academic directors' networks (social capital) and their expertise (human capital) illustrates the unique value they bring in strengthening banks' risk management capabilities.

2.2.2. Upper Echelons theory

A core tenet of human and social capital theory is that directors' unique intellectual capabilities and social resources bring boards certain advantages for decision-making and operating activities. In a related but distinct vein, the Upper Echelons theory (Hambrick and Mason 1984) postulates a more interior and cognitive dimension that demographic characteristics and personalised construals of upper echelon members influence strategic decisions, which could directly impact firms' adaptation and performance (Datta and Iskandar-Datta 2014).

Building on the bounded rationality that complex and uncertain situations are only interpretable but not objectively knowable (Mischel 1977), Hambrick and Mason (1984) constructed the core of Upper Echelons theory into two interconnected layers: leaders act based on their personalised interpretations; and these personalised construals are a function of past experiences, values, and personalities. To elaborate, the Upper Echelon perspective concentrates on executive cognitions, perceptions and values, and how these influence the process of strategic decision-making and resultant performance (Hambrick 2007).

However, since executive cognitions, perceptions, and values are hard to measure, Upper Echelons theory invokes a growing branch of research into demography, suggesting that managerial characteristics are useful proxies for studying the underlying differences involved in directors' cognition, perceptions, and values (Carpenter, Geletkanycz, and Sanders 2004; Sosik, Gentry, and Chun 2012). These upper echelon demographic characteristics commonly involve functional background, age (for example, career horizon or time to retirement), gender, tenure, origin, and education experiences (Bromiley and Rau 2016). For instance, empirical evidence suggests that CEO age is negatively associated with firm performance (Waelchli and Zeller 2013), firm

growth, and stock return volatility and risk-taking (Serfling 2014). Other demographic variables of top management, such as gender, education, and international experiences, have been found to positively influence a range of firm outcomes, including firm performance, R&D intensity, and firm global strategic posture (Carpenter and Fredrickson 2001; Nielsen and Nielsen 2013).

In simple terms, Upper Echelons theory posits that executives' idiosyncratic experiences affect their strategic choices and, thus, influence firms' performance levels. Adams et al. (2015) pointed out that such influences are particularly notable when '… the decision-making situations are complex and ambiguous, as would be the case for banks'. In the current paper, we consider that Upper Echelons theory comes with enough dynamics (that is, directors' demographic characteristics and related personalised construals) to explore professor directors' influence in the risk-taking of Chinese banks. The Chinese banking sector, in turn, provides a unique setting whereby such upper echelon dynamics might be notably impactful.

2.3. Hypothesis development

In general terms, an academic background often signifies duty and intelligence, and academic experience is usually believed to promote values including honesty, prudence, trust, and service that reinforces professional ethics and reduces agency costs (Cho et al. 2017; Wang et al. 2019; White et al. 2014).[4] In China, the traditional Confucian culture accentuates professors' image and reputation and, thus, academics in China are more likely to be considered as relatively more self-disciplined individuals with tougher moral standards and higher social responsibility (Jin et al. 2022; Pang, Zhang, and Zhou 2020). Such culturally and historically driven beliefs are reflected through well-known Chinese sayings such as 'teachers should teach by example, and be models of virtue for others' (Quan and Li 2017). Based on such characteristics and qualities, we see the benefits of having professors on bank boards from the below aspects.

First, in a business environment, managers may have the ability and the motivation to opportunistically withhold disadvantaged information through financial decision-making (Bleck and Liu 2007), or ill-timed and opaque disclosure (Hutton, Marcus, and Tehranian 2009; Kothari, Shu, and Wysocki 2009). In such circumstances, the greater sense of responsibility, higher level of moral principles, and self-discipline that academics possess might effectively monitor managers to better manage the risks of troubled loans (Khurana, Moser, and Raman 2018; Kim, Park, and Lee 2018). Further, it is widely known that academic research and related processes demand precision, rigour, and prudence. Presentation and/or publication of academic research requires accurate data and comprehensive analysis. Academic directors who were trained with such experience have stronger analytical abilities and are more prudent, logical, and rigorous (Huang and Teklay 2021; Jiang and Murphy 2007). Therefore, they are likely to be more credible in information provision and disclosure, thereby reducing the chance of having bad loans (Jin et al. 2022; Kim and Zhang 2016).

Second, academics are trained to be critical thinkers who promote independent thinking. They are less likely to be influenced by others and, thus, can better monitor management loan decision-making (Francis, Hasan, and Wu 2015). Their strong judgment skills can reduce banks' decision-making subjectivity and allow them to make more comprehensive choices against uncertainties (Khan et al. 2022; Zhou et al. 2017). Further, compared to bank leaders from other professions, academic directors tend to have fewer conflicts of interest. This fact enables academic leaders to resist the pursuit of private interests and remain independent, thereby reducing the risk of having troubled loans (Jiang and Murphy 2007; Xiang and Zhu 2020).

Third, professors typically maintain extensive networks and broad social connections across both academia and industry (White et al. 2014). These networks can provide banks with unique and enhanced support for risk control and monitoring, ultimately contributing to more prudent lending decisions. Prior research suggests that monitoring effectiveness improves with greater access to information (Lehn, Patro, and Zhao 2009). Academic directors' wide-ranging networks help facilitate better access to information, while the distinct nature of their connections, extending beyond local ties or geographic proximity, also tends to reduce conflicts of interest.

More specifically, the uniqueness of academic directors' networks lies in their breadth: they are typically cross-sectoral, multi-regional, and not confined to local affiliations (Xiang and Zhu 2020). This contrasts with, for instance, political directors whose networks often centre around local or governmental ties, or financial directors whose connections are concentrated within the finance industry (Liu 2020). This broad scope reflects

the demands of academic careers, which require excellence in both educational activities (such as teaching and mentoring) and research efforts (including publishing, collaboration, fieldwork, and grant-seeking). The former fosters strong ties with students and colleagues who go on to serve in a diverse range of organisations at the local, national, and international levels. The latter connects academics with market innovators, policy institutions, and high-profile practitioners (Francis, Hasan, and Wu 2015; Huang and Teklay 2021).

In addition, many professors serve on multiple boards and hold several directorships. Through these roles, valuable industry insights and even non-public information may flow across firms, enhancing the overall informational environment (Khan et al. 2022). Taken together, this paper argues that academic directors' cross-sectoral and multi-regional networks grant banks broader and more diverse access to high-quality information, enabling more comprehensive assessments of loan quality.

It is important to note that while directors' networks and personal connections can bring advantages, such as facilitating subsidies, securing financial credit, or brokering business deals (Liu, Xie, and Xu 2019), there is also evidence suggesting that shareholders may react negatively to directors with strong local ties, viewing such ties as inhibiting board dissent (Hwang and Kim 2009). In this context, the paper contends that the distinctive nature of academic directors' networks, characterised by their lack of reliance on geographic proximity, may help mitigate the potential downsides associated with localised connections. This independence supports constructive dissent during board discussions and helps ensure more objective and impartial lending decisions, ultimately reinforcing board effectiveness.

Building on the above discussion of academic directors' unique network characteristics, we propose the following hypothesis:

Hypothesis 1: Having academic directors on the board is associated with a lower level of bank NPLs.

Closely following the above overarching hypothesis, our second line of enquiry concerns the impact of academic leaders' overseas educational background on banks' NPL levels. We perceive that there is value in the foreign educational background of academic leaders. First, prior literature suggests that prestigious academics are often connected to local government and politicians (Liu 2020; White et al. 2014). Referring back to the earlier discussion on the negative effects of board directors' strong local ties, such connections may compromise their independence in monitoring and advising, particularly within the distinct context of China's financial market. For this reason, academic directors who attended an overseas university may be less connected to local government or politicians, and this may enable them to remain more independent when monitoring the quality of loans and, thus, the risk of bad loans is significantly reduced. Moreover, there is a cultural effect that underlies the different attributes that academics with an overseas educational background possess. Chinese traditional culture has a collectivism orientation, promoting interdependence and informal networks, whilst Western culture is individualism oriented and values independence and professional networks (Liu 2020; Liu, Xie, and Xu 2019). Such a cultural difference may have an implicit influence on academic directors who studied and lived abroad, and this may also make them more independent in their monitoring and advising activities. This high independence level of academic independent directors may, consequently, prevent banks from taking excessive loan risks.

Second, we assume academic directors who studied overseas acquire more solid and systematic knowledge, or understanding, of the credit process and potential loan risks. In addition, China is considered a weakly institutionalised market economy with incomplete market discipline, debatable law enforcement, and prevalent self-dealing (Jiang, Lee, and Yue 2010; Wong 2016). In such a context, high ethical standards may become particularly important for independent directors. Foreign, especially Western, universities usually have more rigorous ethical requirements for academic activities; academics who were trained overseas may be more persistent with high ethical standards and, thus, are less likely to be induced by insiders for the pursuit of personal interests or for making unreasonable loan decisions (Jin et al. 2022; Liu et al. 2020).

Third, reputation might also be an effective motivator for independent directors in terms of performing their monitoring and advising roles (Yu, Wang, and Wang 2018), and university reputation is believed to be one of the dominant factors. Prior evidence demonstrates that academics from prestigious universities effectively improve company reputation capital and value (Singh and Davidson 2003). By using university rankings as an indicator of director reputation, White et al. (2014) found that nearly half of academic independent directors in the US

were affiliated with top 25 US universities. Similarly, Jiang and Murphy (2007) reported that companies prefer to appoint independent directors who graduated from top-ranked business schools partly due to their reputations. Given the fact that most of the academic leaders in Chinese firms with an overseas educational background graduate from highly ranked overseas universities, they might potentially improve banks' overall reputation, including being more prudent in issuing loans. Given the above, we therefore propose our second hypothesis:

Hypothesis 2: Academic leaders with an overseas educational background leads to a greater reduction in banks' NPL levels.

Within the established body of literature on board diversity and characteristics, there has been ongoing and significant discussion surrounding the demographic attributes of board members (Ibrahim and Yahaya 2023). Among common attributes such as age, education, gender, occupation, and religion, gender diversity has emerged as a particularly influential factor, shown to impact firm performance and decision-making across various dimensions (Nekhili and Gatfaoui 2013). In recent years, the appointment of female directors has attracted considerable media attention (Kellaway 2011), while a growing number of policy initiatives have aimed to promote and increase the representation of women on corporate boards (Gulamhussen and Santa 2015).

One of the principles of advocating board diversity is to improve directors' objectivity and independence while making judgment calls (BCBS 2015). Prior literature has shown that female representation on the board leads to better governance (Adams and Ferreira 2009), less managerial expropriation (Hamzah and Zulkafli 2014), and less aggressive acquisition strategies (Levi, Li, and Zhang 2014). In particular, there is evidence that, in China, female directors lead to increased firm performance (Liu, Wei, and Xie 2014).

There has also been a focus in the finance literature on the impact of female directors on firm risk-taking (Croson and Gneezy 2009). This body of literature has found that women are usually more conservative and risk averse than men, especially in financial decision-making (Barsky et al. 1997; Jianakoplos and Bernasek 1998; Ye, Zhang, and Rezaee 2010). Such findings have led to the contention that females are less overconfident than their male counterparts (Barber and Odean 2001; Niederle and Vesterlund 2007). When it comes to the banking industry, high-quality and solid risk management is particularly important due to banks' ultimate implications for financial systems (Forbes and Milliken 1999). At this point, female directors' unique attributes may offer more rigorous monitoring in relation to risk oversight, and less biased advice in problem-solving (Gulamhussen and Santa 2015). Thus, our third hypothesis is:

Hypothesis 3: Banks with female academic leaders perform better in reducing the level of NPLs.

Our last enquiry concerns the impact of the academic directors' age on the level of banks' NPLs. As previously noted, high reputation and social influence are valuable attributes of academic directors that can help firms gain greater access to external resources (Jiang and Murphy 2007; Singh and Davidson 2003; White et al. 2014). Building up and maintaining a reputation or image may be particularly important and may take significantly more effort for younger academics compared with mature professors. Given their high social influence, risky behaviours of academic directors usually attract greater discussion and wider social effects (Xiang and Zhu 2020). It is reported that when firms violate information disclosure mechanisms, the market tends to punish academic directors more severely than non-academic directors; this, in turn, leads to a negative overflow effect for the appointment of other academics in related fields (Quan and Li 2017). At this point, we argue that younger academics, particularly those who are not yet established, may have stronger incentives to build and maintain their reputation compared to senior academics, who often already hold a well-established and prestigious status. While senior scholars may understandably seek to protect their existing reputations, early-career academics are more likely to prioritise gaining recognition and advancing their long-term career prospects.

This perspective aligns with prior research on director tenure, often used as a proxy for the degree of independence among independent directors (Nguyen and Nielsen 2010). Older academic directors typically hold tenure-track or tenured positions, suggesting they face fewer career-related uncertainties compared to younger academics, who are more vulnerable to career instability (Xiang and Zhu 2020). Moreover, long-tenured independent directors may develop closer ties with company insiders over time, potentially diminishing the effectiveness of their monitoring and oversight functions (Pang, Zhang, and Zhou 2020). This supports the assumption that older academic directors with longer tenure may exhibit greater risk-taking

tendencies due to their reduced monitoring role. By contrast, younger academics, lacking tenure and facing higher career uncertainty, may be more cautious in their decision-making to safeguard their professional future.

Apart from this interior aspect, there are also exterior circumstances in relation to the depreciation of academic directors' human and social capital over time, as well as their tenure length. There is evidence that the likelihood of government officials' joining the boardroom is time dependent since their human and social capital depreciates over time; many of them accept board seats within a month or two of leaving office (Lester et al. 2008). Although this evidence does not relate to academic directors, it is in line with the theory of human and social capital and, therefore, there may be similar effects on academic directors. At this point, it is understandable that older academic directors may be more incentivised to act more boldly in risk-taking to generate short-term benefits for firms, which might mitigate the depreciation in their attractiveness as directors.

In addition, another strand of the literature that explores CEO age also echoes and further confirms the above discussion (e.g. Oh, Chang, and Cheng 2016). In particular, there is evidence suggesting that younger CEOs are more likely to act conservatively (Li, Low, and Makhija 2017). Relatedly, short-tenured (junior) CEOs are more likely to provide downward earnings guidance, and their downward guidance tends to be more conservative (Gan 2023). Despite the fact that the role of CEOs differs from the role of independent directors, these prior findings imply that younger members in the management team may be more risk averse.

In light of the above discussion, we propose our final hypothesis:

Hypothesis 4: Banks with younger academic leaders can perform better in reducing NPL levels.

3. Methodology

3.1. Data and variables

The initial sample includes all commercial banks in China from 2007 to 2020, with a total of 4,648 bank-year observations. Data on bank governance, financial performance, and other characteristics were collected from the China Stock Market and Research (CSMAR) database. To determine whether bank leaders have an academic background, we manually collected and reviewed their CVs from sources such as the CSMAR database, annual reports, university websites, and bank websites. Leaders were classified as having an academic background if their CVs indicated past or current experience serving as assistant professor (or lecturer), associate professor (or senior lecturer), or full professor. These academic titles were used as key indicators. The paper excludes those observations with missing independent and control variable data, such that the final sample consisted of 1,257 bank-year observations. The Generalised Method of Moments (GMM) approach was used to estimate the relationship between academic leaders and bank NPLs. To minimise the influence of outliers on the regression results, all continuous variables were winsorised at the 1% and 99% quantiles.

The dependent variable is a bank's *non-performing loan*, a proxy for bank loan risk, which is defined as the ratio of a bank's NPLs to total loans (Zhang et al. 2016). The independent variable is *bank leaders with professorship,* which takes the value of one if a bank has at least one academic bank leader with a previous or current professorship, and zero otherwise. Chinese banks adopt a two-tiered board structure (Huang and Wang 2015) and, consequently, bank leaders consist of the bank board of directors, supervisors, and other senior management.

The following moderating variables are used to divide samples and examine hypotheses 2, 3 and 4, including academic bank leaders' educational background, gender, and age. Specifically, the variable '*Overseas*' is adopted to split the sample for the second hypothesis. This hypothesis is tested by means of a dummy variable, which equals one if a bank has at least one academic leader with an overseas educational background, and zero otherwise. Subsequently, the sample is divided into banks with overseas academic leaders and those without overseas academic leaders. To examine hypothesis 3, observations are divided into female and non-female leader subgroups, where *Female* is a dummy variable that equals one if a bank has at least one female academic leader and zero otherwise. Moreover, '*professor age*' is introduced to examine the fourth hypothesis. Initially, data on the age of each academic bank leader were collected during the sample period, and then the average value for each

bank in each year was calculated and the samples were subsequently divided into two sub-groups based on the mean value.

Several control variables are included in the regression model. First, *bank size* is used as a control variable; this variable is defined as the natural logarithm of a bank's total assets. Large banks have greater access to different resources and can better diversify potential risks (Hu, Li, and Chiu 2004). Second, *bank leverage* is controlled for, as banks with lower leverage have greater solvency, which reduces the risk of bad loans (Serrano 2021). The third control variable included is bank profitability, as proxied for by a bank's *Return on Assets* (ROA). More profitable banks have greater financial resources available and would be in a better position to provide additional lending to borrowers, which, in turn, lowers its level of risk-taking (Rouse et al. 2023). Moreover, following Wan (2018) and Kryzanowski, Liu, and Zhang (2023), a bank's *loans to deposits* ratio and *deposits to assets* ratio are used as control variables. Previous research has found that the amount of bank deposits and loans are important factors that lead to a change in the level of NPLs (Guan et al. 2017). Finally, *bank age* is included as a control variable since younger banks are generally associated with greater risk due to a lack of capital and connections with external stakeholders (Perryman, Fernando, and Tripathy 2016).

Several bank governance-related variables are also included in the model. First, '*top ownership*', which is defined as the percentage of shares held by the largest shareholder, is included as ownership concentration may result in a conflict of interest between majority and minority shareholders and, subsequently, banks may make decisions in favour of the largest shareholder's risk preference (Rouse et al. 2023). Bank *board size* is included as larger boards can better monitor its management, which reduces the risk-taking level of a bank (Singh et al. 2018). The number of board *committees* is also controlled for in the model. That is, banks with a greater number of *committees* can oversee the lending process more effectively, therefore strengthening the quality of bank loans (Tarchouna, Jarraya, and Bouri 2021). Moreover, *board meeting* frequency is included as a proxy for board due diligence, as board members who meet regularly can better monitor the quality of loans (Chou, Chung, and Yin 2013). Finally, a bank's *punishment* record is controlled for by means of a dummy variable that equals one if a bank has been subject to punishments from regulators in the previous or current year, and zero otherwise. Fraudulent banks are often subject to legal penalties or reputation losses after regulatory punishments, which may increase the risk of low-quality loan-taking (Wang, Ashton, and Jaafar 2023). Table 1 summarises the definitions of the variables used in this study.

3.2. Research model

To accommodate the potential biases of endogeneity, a dynamic system GMM panel estimator is used to investigate the impact of bank leaders with academic professorship on the level of bank NPLs. Specifically, the dynamics of the NPLs are modelled through the dynamic panel specification:

$$NPL_{i,t} = \alpha_0 + \beta_1 NPL_{i,\,t-1} + \beta_2 Professor_{i,t} + \beta_3 Control_{i,t} + \varepsilon_{i,t} \tag{1}$$

where i and t represent banks and years. $NPL_{i,t}$ is the level of bank non-performing loans and $NPL_{i,t-1}$ is its lagged value. $Professor_{i,t}$is a professorship dummy variable, $Control_{i,t}$ is a set of control variables, and ϵ_{it} is the error term.

As an advanced econometric model, the dynamic system GMM, has been used widely in panel data analyses in previous studies (Salas and Saurina 2002; Tarchouna, Jarraya, and Bouri 2021). The GMM approach, which was developed by Arellano and Bover (1995) and Blundell and Bond (1998), relies on moment conditions rather than full density, so it can generate heteroskedasticity-consistent estimations and asymptotically correct standard errors for statistical inferences.

The dynamic system GMM estimator is particularly suited for this analysis due to the potential endogeneity between academic bank leaders and NPLs. For instance, reverse causality or unobserved bank-specific factors may influence both the presence of academic leaders and NPL levels. System GMM mitigates these concerns by using lagged levels and differences of endogenous variables as instruments, producing consistent estimates even in the presence of unobserved heterogeneity.[5] Additionally, NPLs exhibit persistence over time – that is, current NPLs are likely to depend on their past values, which necessitates the inclusion of a lagged dependent variable

Table 1. Variable definitions.

Variable Type	Variable name	Definition
Dependent variable	NPL	Ratio of non-performing loans to total loans
Independent variable	Professor	A dummy variable that equals one if a bank has at least one bank leader (i.e. board member, supervisor, and senior management) with an academic professorship background and zero otherwise. Professorship includes assistant professor (or equivalent position), associate professor (or equivalent position) and full professor.
Moderating variables	Overseas	A dummy variable that equals one if a bank has at least one academic bank leader with an overseas background and zero otherwise.
	Female professor	A dummy variable that equals one if a bank has at least one female academic leader and zero otherwise.
	Professor age	A dummy variable that equals one if a bank's academic leaders are above the sample mean age, and zero otherwise.
Control variables	Bank size	Natural logarithm of a bank's total assets
	Leverage	Ratio of total liabilities to total assets
	ROA	Ratio of net income to total assets
	Loans to Deposits	Ratio of total loans to total deposits
	Deposits to Assets	Ratio of total deposits to total assets
	Bank age	Natural logarithm of one plus the number of years since the bank's establishment.
	Top ownership	The percentage of shares held by the largest shareholder
	Board size	The number of members on the bank's board of directors
	Committee	The number of committees established by a bank
	Meetings	The number of meetings held by the board of directors
	Punishment	A dummy variable that equals one if the bank has been subject to regulatory punishment, and zero otherwise.

Note. This table provides definitions of the variables used in the main analysis of this paper.

in the model. Conventional panel estimators are biased in this setting due to the correlation between the lagged dependent variable and the error term. System GMM addresses this issue by combining moment conditions from both the level and first-differenced equations, thereby improving estimation efficiency and consistency. Moreover, system GMM is well-suited for panels with a short time dimension and many cross-sectional units, as in our dataset, which covers 14 years (2007–2020) across a large number of banks. This structure allows system GMM to efficiently address unobserved bank-specific effects using limited time-series variation.[6]

In this study, NPLs may have a two-way causal relationship with both academic bank leaders and the control variables. Therefore, endogenous regressors in levels are instrumented using their lagged first differences, which are assumed to be uncorrelated with the contemporaneous error terms in levels. The Arellano and Bond (1991) test is applied to check for first- and second-order serial correlation in the first-differenced residuals. While AR(1) processes are expected to result in rejection of the null hypothesis (indicating expected autocorrelation), rejection of the AR(2) null would suggest that the instruments used are weak. To validate the assumptions underlying the system GMM estimator, we conduct several diagnostic tests, including the Hansen overidentification test and the Hausman test. These diagnostics provide empirical support for the robustness of our model.

To test Hypothesis 2, the sample banks are dichotomised into those with overseas academic leaders and those without overseas academic leaders, and the main regression model is re-estimated. Similarly, to examine Hypothesis 3, the sample is divided into banks with female and non-female academic leaders. Finally, to examine Hypothesis 4, the sample is split into banks with older and younger academic leaders. Windmeijer's (2005) finite-sample corrected standard errors are applied throughout the analysis.

4. Results

4.1. Descriptive statistics

Panel A of Table 2 presents the overall descriptive statistics. On average, NPLs account for about 1.518% of total loans among Chinese commercial banks. This figure is in line with the statistics reported by Zhang et al. (2016) who found a NPL ratio of 1.830% based on a sample of Chinese banks from 2006 to 2012. The mean

Table 2. Descriptive statistics.

2.1 Summary statistics

Variables	Mean	SD	Min	Median	Max
NPL (%)	1.836	1.320	0.000	1.530	8.080
Professor	0.474	0.500	0.000	0.000	1.000
Overseas	0.153	0.360	0.000	0.000	1.000
Female professor	0.018	0.134	0.000	0.000	1.000
Professor age (dummy)	0.895	0.306	0.000	0.000	1.000
Professor age (value)	54.519	5.943	35.500	54.600	100.000
Bank Size	25.841	1.740	21.345	25.522	31.191
Leverage (%)	12.665	3.140	0.281	12.259	27.132
ROA (%)	89.574	37.943	4.632	86.967	235.967
Loans to Deposits (%)	67.605	11.797	31.478	68.579	95.333
Deposits to Assets (%)	70.644	10.929	18.141	71.188	92.184
Bank age	16.742	11.845	2.008	15.101	109.978
Top ownership (%)	20.310	20.969	0.420	14.870	100.000
Board size	12.638	2.698	5	13	20
Committee	5.677	1.235	0	6	10
Meetings	8.830	4.588	2	8	26
Punishment	0.056	0.231	0	0	1

2.2 The percentage of banks that have academic leaders in each province.

Provinces	% of academic leader	% of banks	Provinces	% of academic leader	% of banks
Anhui	0.67	7.78	Jilin	1.20	0.61
Beijing	21.23	6.58	Liaoning	3.07	3.89
Chongqing	3.04	1.25	Neimenggu	0.00	1.32
Fujian	3.94	15.39	Ningxia	0.17	0.87
Gansu	0.90	0.52	Qinghai	0.00	0.49
Guangdong	12.82	6.55	Shaanxi	2.37	0.82
Guangxi	0.73	1.27	Shandong	2.57	4.83
Guizhou	2.37	0.64	Shanghai	8.01	4.69
Hebei	0.57	2.92	Shanxi	0.00	1.30
Heilongjiang	1.23	0.57	Sichuan	4.24	5.77
Henan	2.70	2.88	Tianjin	1.40	1.25
Hubei	2.47	1.11	Xinjiang	0.63	0.71
Hunan	0.97	1.44	Yunnan	1.57	0.80
Jiangsu	10.78	8.81	Zhejiang	10.35	11.08
Jiangxi	0	3.87			

Note. This table details some summary statistics of the variable employed in the paper. Specifically, Panel 1 of the table shows the mean, standard deviation, minimum value, maximum value, and median, while Panel 2 details the percentage of banks that have academic leaders in each province in China.

value of academic professor is 0.474, indicating that about 47.4% of commercial banks have at least one leader with an academic background. In addition, 15.3% banks have at least one academic leader with an overseas educational background, and 1.8% banks have at least one female academic leader. It can also be observed from the table that the average age of these academic leaders is around 55 years old. The average value of the board size is approximately 13 members, and these board members hold about nine meetings per year. Additionally, the average bank age is about 16.74 years, indicating that most commercial banks in China are relatively young. With respect to block ownership, 20.31% of shares, on average, are held by the largest shareholder.

Panel B of Table 1 presents the proportion of banks with academic leaders by province during the sample period. It is apparent from the table that provinces (or municipalities) such as Beijing, Guangdong, Zhejiang, and Jiangsu have a higher number of bank leaders with an academic background. These provinces are the most developed in China and have a higher number of first-tier ranking universities within their regions. The variables were tested for multicollinearity, and the mean-variance inflation factor (VIF) of all variables is 1.49. A correlation matrix is presented in Appendix 1; it shows that all correlation coefficients are less than 0.54, implying that multicollinearity is not an issue in this paper.

Figure 1 shows the amount of bank loans and the proportion of NPLs during the sample period. The figure shows that the amount of total bank loans is on an upward trend, but the proportion of NPLs fluctuates between

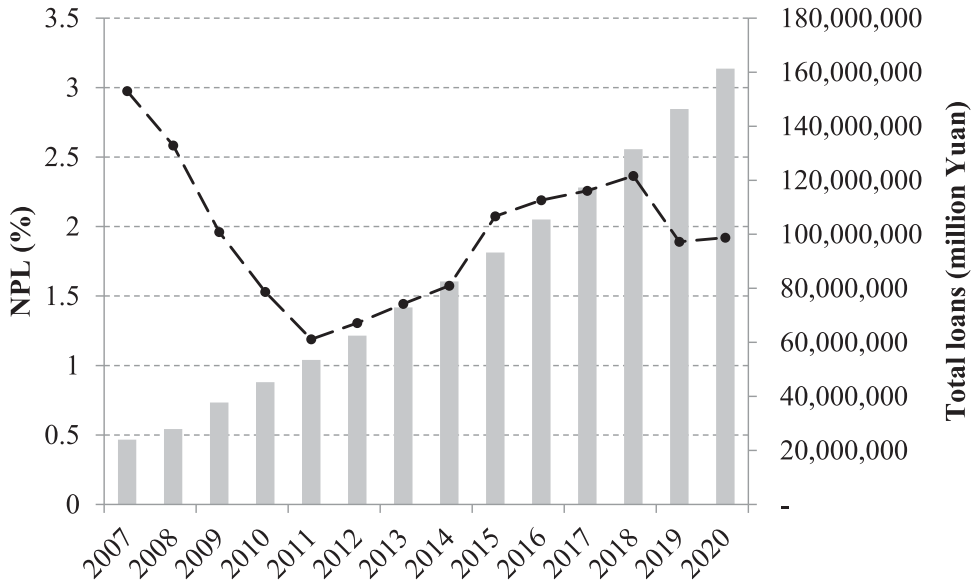

Figure 1. The percentage of NPL and total bank loans from 2007 to 2020.

Note. This figure shows both the total loans (in million Yuan) and the percentage of non-performing loans of Chinese commercial banks over the period 2007–2020.

1.0% and 3.0% over the 2007 to 2020 period. The proportion of NPLs reached its lowest point in 2011, which is similar to the results reported by Wan (2018) and is perhaps due to the market fear of the 2008/09 Global Financial Crisis.

4.2. Regression results

The regression results are presented in Table 3. It is observed that there is a negative relationship between academic bank leaders and NPLs in Column 1. Thus, the results validate Hypothesis 1, and indicate that academic bank leaders tend to be more cautious and independent; they demand precision, rigour, and prudence when reviewing the quality of loans. Thus, they can effectively reduce the amount of NPLs (Huang and Teklay 2021).

Columns 2 and 3 of Table 3 report the results for Hypothesis 2. It is observed that academic bank leaders are negatively associated with NPLs when they have an overseas educational background. By contrast, there is no significant relationship between academic leaders without an overseas educational background and NPLs. These results imply that Chinese bank leaders who pursue their studies overseas tend to be more ethically responsible and are more active when monitoring the quality of loans, therefore reducing the risk of bad loans (Liu 2020).

Columns 4 and 5 of Table 3 examine the impact of academic bank leaders on NPLs by incorporating the factor of gender diversity. The table shows that there is a significant and negative relationship between academic bank leaders and NPLs in both female and non-female leader groups. However, when compared to banks with all male academic leaders, the negative impact of academic leaders on NPLs is more pronounced for banks with female academic leaders. This finding is evidenced by the magnitude of the coefficient estimates of the main independent variable '*professor*' in Column 4 (−0.132), which is much higher than the coefficient estimates in Column 5 (−0.074). This finding is supported theoretically by a growing body of literature suggesting that gender plays an important role in shaping risk preferences and decision-making styles, especially in leadership contexts. For instance, Wang, Yu, and Gao (2022) found that female executives were generally more risk-averse, cautious, and compliance-oriented, characteristics that are particularly relevant in the context of bank risk management. Similarly, Faccio, Marchica, and Mura (2016) showed that firms with female CEOs tended to engage in less aggressive financial policies. These behavioural tendencies imply that female academic leaders may adopt

Table 3. Main regression results: Panel system-GMM estimator.

	Column 1	Sub-sample (1)		Sub-sample (2)		Sub-sample (3)	
Variables	Main model	Overseas	Non-overseas	Female professor	Non-female professor	Age over mean	Age below mean
Professor	−0.085***	−0.147***	−0.053	−0.132***	−0.074**	−0.032	−0.230***
	(−2.754)	(−3.202)	(−1.448)	(−2.661)	(−2.291)	(−0.823)	(−3.297)
L.NPL	0.633***	0.721***	0.602***	0.632***	0.640***	0.618***	0.719***
	(29.697)	(31.247)	(28.686)	(29.045)	(29.786)	(27.632)	(31.765)
Bank size	0.760**	1.080***	−0.196	1.026***	0.661*	0.204	1.586***
	(2.159)	(4.239)	(−0.397)	(6.314)	(1.779)	(0.491)	(4.159)
Leverage	−0.004	−0.003	−0.003	−0.025***	−0.004	−0.006	−0.007
	(−0.790)	(−0.640)	(−0.586)	(−4.546)	(−0.825)	(−0.968)	(−1.492)
ROA	−0.358***	−0.222***	−0.425***	−0.336***	−0.361***	−0.389***	−0.110**
	(−8.842)	(−4.333)	(−9.695)	(−8.005)	(−8.878)	(−8.713)	(−2.621)
Loans to Deposits	0.001	−0.001	0.001	−0.004***	0.001	0.001	−0.002
	(1.096)	(−0.823)	(0.902)	(−4.219)	(0.982)	(0.178)	(−1.313)
Deposits to Assets	0.001	−0.001	−0.001	−0.001	0.001	−0.002	0.003**
	(0.209)	(−0.153)	(−0.752)	(−0.523)	(0.186)	(−1.356)	(2.219)
Bank age	−0.077**	−0.018	−0.115***	−0.035**	−0.068**	−0.076**	−0.053*
	(−2.397)	(−0.681)	(−3.244)	(−2.029)	(−2.069)	(−2.109)	(−1.748)
Top ownership	−0.094***	−0.051**	−0.103***	−0.003	−0.093***	−0.077***	−0.076***
	(−4.095)	(−2.530)	(−3.871)	(−0.183)	(−4.050)	(−2.826)	(−3.779)
Board size	−0.144**	−0.065	−0.176**	−0.072	−0.147**	−0.175**	−0.193**
	(−2.295)	(−1.088)	(−2.403)	(−1.289)	(−2.313)	(−2.283)	(−2.503)
Committee	−0.003	−0.031***	−0.002	−0.002	−0.004	0.004	−0.016
	(−0.393)	(−3.615)	(−0.185)	(−0.207)	(−0.405)	(0.417)	(−1.245)
Meetings	−0.003	−0.007***	−0.001	−0.011***	−0.003	−0.003	−0.004
	(−0.988)	(−2.907)	(−0.276)	(−4.755)	(−0.835)	(−1.020)	(−1.369)
Punishment	0.011	0.073**	−0.033	−0.078**	0.038	−0.001	−0.050*
	(0.181)	(2.246)	(−0.453)	(−2.186)	(0.600)	(−0.001)	(−1.700)
Constant	−0.771	−2.131***	2.673*	−1.395**	−0.467	1.303	−3.523***
	(−0.729)	(−2.867)	(1.755)	(−2.516)	(−0.421)	(1.023)	(−3.126)
Observations	1, 257	364	893	235	1, 022	964	293
A-B AR(1) test	−5.069	−3.194	−4.836	−2.619	−5.101	−4.933	−3.127
[*p*-Value]	[0.000]	[0.001]	[0.000]	[0.000]	[0.000]	[0.000]	[0.002]
A-B AR(2) test	−1.601	−0.800	−1.623	−0.597	−1.588	−1.616	−1.236
[*p*-Value]	[0.109]	[0.424]	[0.105]	[0.551]	[0.112]	[0.106]	[0.217]
Sargan overid. test	6.87	2.94	2.08	3.93	3.97	0.87	2.00
[*p*-Value]	[0.076]	[0.086]	[0.556]	[0.269]	[0.265]	[0.834]	[0.572]
Hansen overid. test	2.63	2.36	0.58	1.70	0.57	0.55	3.06
[*p*-Value]	[0.452]	[0.124]	[0.901]	[0.636]	[0.902]	[0.909]	[0.383]
Hausman statistics	3.75	1.67	8.63	13.18	6.83	15.04	16.92
[*p*-Value]	[0.923]	[0.998]	[0.802]	[0.068]	[0.941]	[0.376]	[0.203]

Note. The dependent variable is NPL. Instrumental variables in our estimation include the second lag of the dependent variable and the first lag of all the independent and control variables, including *Professor, Bank Size, Leverage, ROA, Loans to Deposits, Deposits to Assets, Bank age, Top ownership, Board size, Committee, Meetings, and Punishment. t-statistics* for coefficient estimates are in parentheses, and standard errors are calculated based on Windmeijer's (2005) finite-sample corrected standard errors. *p*-values for various tests are recorded in square brackets. $^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.1$.

more prudent lending and oversight practices, thereby reducing the likelihood of NPLs. The intersection of academic expertise and gender-based behavioural traits could make female academic leaders especially effective in promoting sound credit risk governance.

Columns 6 and 7 of Table 3 present the impact of academic leaders on NPLs between younger and older bank leader sub-groups, respectively. The table shows that there is a significant negative relationship between academic leaders and bank NPL levels when leaders are relatively young and below the sample median value. However, when their ages are above the sample median value, there is no significant impact of academic leaders on NPLs. This result may be related to young bank leaders' long-term career horizons and reputational concerns (Cho and Kim 2017); they tend to have greater oversight over bank loan quality, reducing the amount of NPLs.

The results of some control variables are also worth noting. For instance, ROA is negatively associated with bank NPLs, indicating that banks with poor financial performance are more likely to have higher levels of NPLs.

In addition, bank age is negatively related to NPLs, which is in line with the argument advanced by Perryman, Fernando, and Tripathy (2016) that newly established banks have fewer resources and qualified professionals, leading to poor evaluation of loan quality. Moreover, bank board size has a negative impact on NPLs. This finding suggests that a large board with more professionals can effectively monitor bank loan quality, reducing the level of troubled loans.

To ensure the reliability of the system-GMM estimations presented in Table 3, several diagnostic tests were conducted. The AR(2) test p-values are all above the 0.1 threshold, indicating no second-order autocorrelation and supporting instrument validity. Both the Sargan and Hansen over-identification tests further confirm that the instruments are valid and uncorrelated with the error term. Additionally, the Hausman test p-values suggest no systematic differences between the consistent and efficient estimators, indicating that the assumptions of the GMM estimation are not violated. Together, these results confirm the validity of the instruments and the suitability of the model specification for addressing potential endogeneity and serial correlation.

4.3. Robustness tests

4.3.1. Alternative independent and dependent variables

Several additional tests are carried out to examine the robustness of the baseline results. First, an alternative measure of the independent variable (the proportion of academic leaders) is replaced by the dummy variables that were used in the previous baseline analysis to re-estimate hypotheses 1–4. Columns 1–4 of Table 44.1 show that the main result still holds with these alternative measures, implying that a greater proportion of academic bank leaders leads to a significant reduction in the level of NPLs. In addition, this negative effect is more pronounced when these academic leaders are female, relatively young and have an overseas educational background.

Moreover, we employed an alternative measure for the dependent variable to capture overall bank risk-taking, namely the Z-score. This version, developed by Altman et al. (2017), is a revised model of the original Z-score and is applicable to both public and private banks. The Z-score is calculated as:

$$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4 \tag{2}$$

where X_1 is working capital divided by total assets; X_2 is retained earnings over total assets, reflecting the bank's financial leverage; X_3 is earnings before interest and taxes divided by total assets; and X_4 is the book value of equity over total liabilities. We re-estimated the baseline analysis using this alternative measure, and the results in Table 44.2 show that our main findings remain robust.

4.3.2. Different bank leaders

A further examination of how different academic bank leaders affect NPLs is undertaken. Following a German-style two-tiered board structure, China's commercial banks have established two types of boards, including a board of supervisors and a board of directors (Wang, Yu, and Gao 2022). Consequently, the sample is divided into three categories, including academic independent directors, academic supervisors, and other academic executive directors or senior management. It is reported that, amongst all academic bank leaders, the sample consists of 18.66% academic independent directors, 76.37% academic board of supervisors, and 4.97% academic directors or senior managers. To examine their impact on NPLs, each category is further divided into two sub-groups, depending on whether a bank leader has an academic background.

The results from this analysis are presented in Table 5. As shown in Columns 1 and 2, there is a significant negative relationship between academic independent directors and NPLs. In other words, the presence of academic independent directors on the board contributes to the effective monitoring of bank loan quality and a concomitant reduction in the level of troubled loans. Columns 3 and 4 report a significant and negative association between academic supervisors and non-performing loans. By contrast, non-academic supervisors have no significant impact on bank NPLs. The results further confirm the finding that academic board of supervisors perform supervisory roles effectively. Their greater independence enables them to act as effective monitors, thus reducing the amount of NPLs. The impact of other academic directors and senior management on bank loan quality is also examined, and the results are shown in Columns 5 and 6. Academic directors or senior

Table 4. Robustness checks.

4.1 Robustness checks: alternative independent variable (Proportion of academic leaders)

	Column 1	Sub-sample (1)		Sub-sample (2)		Sub-sample (3)	
Variables	Main model	Overseas	Non-overseas	Female professor	Non-female professor	Age over mean	Age below mean
Professor proportion	−0.409**	−0.343***	−0.231	−0.512***	−0.204	0.089	−0.607***
	(−2.249)	(−3.073)	(−0.873)	(−4.662)	(−0.921)	(0.339)	(−4.237)
L.NPL	0.622***	0.693***	0.580***	0.583***	0.611***	0.588***	0.729***
	(29.910)	(37.791)	(29.410)	(26.050)	(30.041)	(27.219)	(34.991)
Bank size	0.385	0.938***	−0.883*	1.319***	−0.174	−0.296	0.871**
	(1.017)	(3.417)	(−1.710)	(8.348)	(−0.400)	(−0.665)	(2.297)
Leverage	−0.012***	−0.008**	−0.011*	−0.020***	−0.011**	−0.013**	−0.017***
	(−2.677)	(−2.457)	(−1.937)	(−4.033)	(−2.227)	(−2.168)	(−4.015)
ROA	−0.399***	−0.213***	−0.507***	−0.394***	−0.426***	−0.441***	−0.110**
	(−8.886)	(−4.805)	(−10.619)	(−11.025)	(−9.722)	(−9.306)	(−2.197)
Loans to Deposits	0.001	−0.002*	0.001	−0.003***	0.001	−0.001	−0.002**
	(0.557)	(−1.941)	(0.811)	(−3.152)	(1.054)	(−0.073)	(−2.319)
Deposits to Assets	−0.002	−0.002*	−0.003**	−0.001	−0.003**	−0.002*	−0.003**
	(−1.480)	(−1.983)	(−1.991)	(−0.615)	(−2.223)	(−1.817)	(−2.404)
Bank age	−0.077**	−0.006	−0.126***	−0.005	−0.101***	−0.073*	−0.095***
	(−2.152)	(−0.220)	(−3.316)	(−0.242)	(−2.681)	(−1.803)	(−2.717)
Top ownership	−0.055**	−0.025	−0.058**	−0.022	−0.055**	−0.037	−0.017
	(−2.191)	(−1.528)	(−2.079)	(−1.340)	(−2.154)	(−1.335)	(−0.763)
Board size	−0.235***	−0.071	−0.256***	−0.130**	−0.232***	−0.249***	−0.265***
	(−3.735)	(−1.096)	(−3.391)	(−2.588)	(−3.075)	(−3.192)	(−4.228)
Committee	−0.008	−0.035***	−0.011	−0.002	−0.008	−0.002	−0.035***
	(−0.841)	(−3.738)	(−0.964)	(−0.177)	(−0.753)	(−0.226)	(−3.267)
Meetings	−0.002	−0.006**	0.001	−0.013***	−0.001	−0.002	−0.003
	(−0.685)	(−2.449)	(0.391)	(−7.468)	(−0.342)	(−0.781)	(−1.018)
Punishment	−0.018	0.096***	−0.084	−0.084**	0.024	−0.029	−0.071**
	(−0.320)	(3.717)	(−1.244)	(−2.328)	(0.345)	(−0.467)	(−2.187)
Constant	0.942	−1.521*	5.390***	−2.224***	2.848**	3.284**	−0.487
	(0.831)	(−1.806)	(3.421)	(−4.720)	(2.196)	(2.424)	(−0.423)
Observations	1, 189	354	835	225	964	909	280
A-B AR(1) test	−4.986	−3.225	−4.620	−2.610	−4.821	−4.692	−3.156
[*p*-Value]	[0.000]	[0.001]	[0.000]	[0.009]	[0.000]	[0.000]	[0.002]
A-B AR(2) test	−1.528	−0.050	−1.607	−0.188	−1.529	−1.558	−0.083
[*p*-Value]	[0.127]	[0.960]	[0.108]	[0.851]	[0.126]	[0.119]	[0.934]
Sargan overid. test	4.71	1.78	7.14	20.82	2.14	0.84	11.59
[*p*-Value]	[0.194]	[0.620]	[0.067]	[0.350]	[0.544]	[0.839]	[0.115]
Hansen overid. test	2.13	0.48	2.18	11.84	1.33	0.51	8.01
[*p*-Value]	[0.545]	[0.922]	[0.535]	[0.376]	[0.721]	[0.916]	[0.332]
Hausman statistics	15.22	2.68	17.18	10.24	5.34	16.91	6.45
[*p*-Value]	[0.294]	[0.997]	[0.103]	[0.332]	[0.967]	[0.204]	[0.842]

4.2. Robustness checks: alternative dependent variable (z-score)

	Column 1	Sub-sample (1)		Sub-sample (2)		Sub-sample (3)	
Variables	Main model	Overseas	Non-overseas	Female professor	Non-female professor	Age over mean	Age below mean
Professor	−0.229**	−0.220***	−0.105	−0.183**	0.015	−0.001	−0.325**
	(−2.424)	(−3.273)	(−1.274)	(−2.159)	(0.190)	(−0.015)	(−2.390)
L.Z-Score	0.217***	0.168***	0.618***	0.543***	0.624***	0.593***	0.885***
	(24.485)	(94.440)	(25.727)	(19.874)	(23.652)	(23.276)	(70.516)
Bank size	−4.464***	−6.742***	−4.756***	−0.704	−3.631***	−3.534***	−0.915
	(−4.287)	(−12.061)	(−4.116)	(−0.663)	(−4.453)	(−3.625)	(−1.245)
Leverage	−0.595***	−0.641***	−0.385***	−0.692***	−0.364***	−0.384***	−0.191***
	(−32.013)	(−120.131)	(−14.236)	(−38.410)	(−14.536)	(−14.053)	(−12.885)
ROA	0.563***	1.245***	0.443***	0.597***	0.557***	0.449***	0.580***
	(6.297)	(15.970)	(5.324)	(5.050)	(6.530)	(4.578)	(4.507)
Loans to Deposits	−0.001	−0.056***	−0.006*	−0.054***	−0.007**	−0.006	−0.017***
	(−0.372)	(−23.365)	(−1.692)	(−9.893)	(−2.172)	(−1.648)	(−4.453)

(*continued*).

Table 4. Continued.

4.2. Robustness checks: alternative dependent variable (z-score)

	Column 1	Sub-sample (1)		Sub-sample (2)		Sub-sample (3)	
Variables	Main model	Overseas	Non-overseas	Female professor	Non-female professor	Age over mean	Age below mean
Deposits to Assets	−0.006	−0.015***	−0.017***	−0.050***	−0.017***	−0.016***	−0.020***
	(−1.560)	(−6.690)	(−4.258)	(−11.475)	(−4.879)	(−4.024)	(−5.170)
Bank age	0.006	0.759***	0.058	−0.165**	0.096	0.052	0.048
	(0.071)	(18.751)	(0.847)	(−2.610)	(1.442)	(0.736)	(0.596)
Top ownership	0.490***	0.499***	0.377***	0.699***	0.356***	0.401***	0.209***
	(6.334)	(20.881)	(7.406)	(9.677)	(7.304)	(6.927)	(2.998)
Board size	0.604***	0.592***	0.453***	0.869***	0.353**	0.380*	0.126
	(2.916)	(8.410)	(2.607)	(5.351)	(2.125)	(1.952)	(0.788)
Committee	0.081***	−0.044***	−0.026	−0.160***	−0.029	−0.012	−0.095***
	(3.177)	(−4.789)	(−0.882)	(−5.207)	(−1.127)	(−0.413)	(−2.964)
Meetings	0.007	0.009***	0.030***	0.026***	0.024***	0.025***	0.019**
	(1.184)	(3.981)	(5.659)	(3.374)	(4.895)	(4.882)	(2.316)
Punishment	0.008	0.158***	−0.148	0.250***	−0.105	−0.141	0.051
	(0.121)	(3.889)	(−1.554)	(3.042)	(−1.315)	(−1.640)	(0.559)
Constant	26.089***	37.187***	22.697***	19.194***	18.971***	18.941***	8.290***
	(8.170)	(21.929)	(6.014)	(5.743)	(7.435)	(6.177)	(3.621)
Observations	1, 265	367	898	231	1, 034	981	284
A-B AR(1) test	−2.166	−1.010	−2.328	−1.312	−2.269	−2.219	−4.294
[*p*-Value]	[0.030]	[0.013]	[0.020]	[0.090]	[0.023]	[0.027]	[0.001]
A-B AR(2) test	−0.927	−1.097	−0.765	1.103	−0.657	−0.717	0.467
[*p*-Value]	[0.354]	[0.273]	[0.444]	[0.270]	[0.511]	[0.473]	[0.640]
Sargan overid. test	29.43	20.04	17.91	26.06	15.92	32.00	19.59
[*p*-Value]	[0.166]	[0.272]	[0.057]	[0.098]	[0.254]	[0.127]	[0.484]
Hansen overid. test	11.03	10.74	14.10	16.16	12.39	25.70	56.55
[*p*-Value]	[0.983]	[0.870]	[0.168]	[0.581]	[0.496]	[0.369]	[0.034]
Hausman statistics	0.08	4.33	16.60	15.76	13.44	26.09	4.06
[*p*-Value]	[1.000]	[0.931]	[0.084]	[0.027]	[0.492]	[0.025]	[0.991]

Note. Table 4.1. The dependent variable is NPL. Instrumental variables in our estimation include the second lag of the dependent variable and the first lag of all the independent and control variables, including *Professor, Bank Size, Leverage, ROA, Loans to Deposits, Deposits to Assets, Bank age, Top ownership, Board size, Committee, Meetings, and Punishment*. *t-statistics* for coefficient estimates are in parentheses, and standard errors are calculated based on Windmeijer's (2005) finite-sample corrected standard errors. *p*-values for various tests are recorded in square brackets. $^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.1$.

Note. Table 4.2. The dependent variable is Z-Score. Instrumental variables in our estimation include the second lag of the dependent variable and the first lag of all the independent and control variables, including *Professor, Bank Size, Leverage, ROA, Loans to Deposits, Deposits to Assets, Bank age, Top ownership, Board size, Committee, Meetings, and Punishment*. *t-statistics* for coefficient estimates are in parentheses, and standard errors are calculated based on Windmeijer's (2005) finite-sample corrected standard errors. *p*-values for various tests are recorded in square brackets. $^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.1$.

managers include those CEOs, CFOs, other executive directors, general managers, and others who work in a senior capacity and who have an academic background. It is reported that there is no significant relationship between academic directors or senior managers and the level of NPLs. This finding may be due to the fact that academic senior managers are mainly in charge of the operation of the banks, making decisions on the offering of loans. Consequently, they are less likely to play an independent role in monitoring bank loan quality.

4.3.3. Bank and regional level heterogeneities

The relationship between academic bank leaders and the level of NPLs is examined whilst incorporating other bank-level heterogeneities, including state ownership and listing status, as well as regional-level heterogeneity (that is, the provincial financial inclusion level). First, the sample is divided into two sub-groups, including state-owned banks, and non-state-owned banks, and the impact of academic leaders on bank NPLs is re-estimated. Columns 1 and 2 of Table 6 report the results. It is observed that the negative relationship between academic leaders and NPLs is more pronounced in state-owned banks. However, there is no significant relationship between academic leaders and NPLs in non-state-owned banks. The results indicate that academic leaders in state-owned

Table 5. Robustness checks: Different types of bank leaders.

	(1) Independent director		(2) Supervisor		(3) Manager/director	
Variables	Professor	Non-professor	Professor	Non-professor	Professor	Non-professor
Professor	−0.305***	−0.081	−0.279***	−0.036	0.238	−0.077
	(−3.624)	(−1.546)	(−3.049)	(−0.961)	(0.102)	(−1.282)
L.NPL	0.715***	0.584***	0.719***	0.612***	−0.336	0.609***
	(31.423)	(28.942)	(33.241)	(30.119)	(−0.502)	(28.537)
Bank size	0.935***	−0.339	1.232***	0.385	13.391	0.682
	(3.996)	(−0.555)	(4.389)	(0.855)	(1.276)	(1.620)
Leverage	−0.010**	0.003	−0.009***	−0.004	0.105	−0.008*
	(−2.120)	(0.517)	(−2.741)	(−0.763)	(0.676)	(−1.784)
ROA	−0.160***	−0.467***	−0.116***	−0.420***	1.288	−0.492***
	(−3.122)	(−11.321)	(−2.801)	(−10.206)	(1.174)	(−8.965)
Loans to Deposits	0.001	0.001	−0.003***	0.002	0.054	0.001
	(0.269)	(1.006)	(−3.742)	(1.075)	(1.146)	(0.626)
Deposits to Assets	0.001	−0.001	−0.002	0.001	0.001	0.002
	(0.113)	(−1.002)	(−1.463)	(0.252)	(0.033)	(1.449)
Bank age	−0.086***	−0.124***	−0.056	−0.090**	−0.523	−0.096***
	(−2.683)	(−3.400)	(−1.655)	(−2.556)	(−0.667)	(−2.746)
Top ownership	−0.029	−0.106***	−0.048*	−0.080***	−0.455	−0.083***
	(−1.314)	(−3.792)	(−1.954)	(−2.978)	(−0.621)	(−3.394)
Board size	−0.128**	−0.145*	−0.130**	−0.218***	−1.068	−0.099
	(−2.022)	(−1.959)	(−2.217)	(−2.980)	(−0.916)	(−1.404)
Committee	−0.001	−0.002	−0.001	0.003	−0.043	−0.003
	(−0.038)	(−0.213)	(−0.130)	(0.332)	(−0.168)	(−0.371)
Meetings	−0.005*	0.002	−0.010***	0.002	−0.048*	−0.003
	(−1.938)	(0.440)	(−4.995)	(0.653)	(−1.838)	(−0.919)
Punishment	−0.012	0.013	0.043	0.022	0.705	−0.017
	(−0.377)	(0.164)	(1.470)	(0.285)	(0.477)	(−0.277)
Constant	−1.440*	3.079	−2.075**	0.616	−42.223	−0.477
	(−1.963)	(1.629)	(−2.524)	(0.447)	(−1.244)	(−0.367)
Observations	544	713	379	878	39	1, 218
A-B AR(1) test	−3.961	−4.616	−3.355	−4.779	1.380	−4.942
[*p*-Value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.168]	[0.000]
A-B AR(2) test	−1.201	−1.690	−1.222	−1.717	−0.162	−1.620
[*p*-Value]	[0.230]	[0.091]	[0.222]	[0.086]	[0.871]	[0.105]
Sargan overid. test	0.30	0.33	0.81	4.03	39.61	10.89
[*p*-Value]	[0.584]	[0.954]	[0.668]	[0.133]	[0.354]	[0.143]
Hansen overid. test	0.17	0.18	0.23	2.60	2.06	7.00
[*p*-Value]	[0.681]	[0.980]	[0.892]	[0.273]	[0.999]	[0.428]
Hausman statistics	9.94	0.08	0.01	3.41	8.94	7.16
[*p*-Value]	[0.621]	[1.000]	[1.000]	[0.946]	[0.443]	[0.847]

Note: The dependent variable is NPL. Instrumental variables in our estimation include the second lag of the dependent variable and the first lag of all the independent and control variables. In columns 1, 2, and 3, the 'Professor' sub-group includes banks with at least one independent director (supervisor or manager/director) who has a professorship background. The 'Non-Professor' group consists of banks that lack such a member in that specific role (though they may have professors in other positions). *t-statistics* for coefficient estimates are in parentheses, and standard errors are calculated based on Windmeijer's (2005) finite-sample corrected standard errors. *p*-values for various tests are recorded in square brackets. ***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$.

banks can effectively reduce bad loans. One of the reasons for this may be because state-owned banks have stronger connections with the central government, which allow them to have less constrained budgets and greater financial resources (Kryzanowski, Liu, and Zhang 2023). Consequently, academic leaders in state-owned banks are more likely to reduce NPLs as compared to their non-state-owned counterparts.

Columns 3 and 4 report results relating to the impact of academic leaders on NPLs whilst considering banks' listing status. The samples are divided into listed banks (241 bank-year observations) and non-listed banks (1,017 bank-year observations). The results show that the negative impact of academic leaders on the level of NPLs is more pronounced for listed banks. This result may be due to the fact that banks that are listed on the stock exchange face stricter capital and liquidity regulations and tougher supervision from market regulators (Craig Nichols, Wahlen, and Wieland 2009). Consequently, they have a greater incentive to closely monitor the quality of loans and, thus, the level of NPLs is lower.

Table 6. Robustness checks: bank and regional level heterogeneity.

	Bank ownership		Financial inclusion		Listing status	
Variables	SOE	Non-SOE	High level	Low level	Listing	Non-listing
Professor	−0.096***	−0.042	−0.105***	−0.100	−0.119*	−0.041
	(−3.115)	(−0.749)	(−3.458)	(−1.516)	(−1.781)	(−1.531)
L.NPL	0.669***	0.587***	0.734***	0.382***	0.794***	0.604***
	(30.755)	(22.299)	(32.509)	(6.786)	(30.316)	(36.062)
Bank size	0.455	0.461	1.170***	0.773	1.060***	−0.751*
	(1.438)	(0.555)	(3.146)	(1.173)	(5.434)	(−1.770)
Leverage	−0.022***	0.014	0.014**	−0.038***	−0.005	0.002
	(−4.456)	(1.039)	(2.391)	(−3.816)	(−1.029)	(0.404)
ROA	−0.347***	−0.390***	−0.252***	−0.712***	0.009	−0.395***
	(−5.696)	(−6.228)	(−4.489)	(−6.546)	(0.112)	(−11.352)
Loans to Deposits	−0.002	0.002	−0.002*	0.004	−0.001	0.001
	(−1.408)	(0.982)	(−1.699)	(1.508)	(−0.536)	(1.068)
Deposits to Assets	−0.002	0.001	0.001	0.007***	−0.005***	−0.001
	(−1.630)	(0.552)	(0.231)	(3.315)	(−2.798)	(−0.560)
Bank age	−0.059**	−0.087	−0.004	−0.022	−0.005	−0.106***
	(−1.992)	(−1.323)	(−0.109)	(−0.499)	(−0.143)	(−3.683)
Top ownership	−0.047*	−0.089*	−0.059**	−0.145***	−0.007	−0.103***
	(−1.681)	(−1.849)	(−2.321)	(−4.246)	(−0.411)	(−4.798)
Board size	−0.007	−0.077	−0.133*	−0.178	−0.071	−0.032
	(−0.101)	(−0.683)	(−1.953)	(−1.455)	(−0.776)	(−0.502)
Committee	0.003	0.064	0.009	0.022	0.004	0.004
	(0.289)	(0.985)	(0.952)	(1.077)	(0.335)	(0.454)
Meetings	−0.001	−0.027	−0.005	−0.010*	−0.001	−0.003
	(−0.188)	(−1.403)	(−1.565)	(−1.894)	(−0.528)	(−1.052)
Punishment	−0.160***	0.290*	0.032	−0.237*	0.138	0.064
	(−4.573)	(1.911)	(0.631)	(−1.875)	(1.494)	(0.863)
Constant	0.255	−0.424	−2.744**	−0.232	−2.535***	3.947***
	(0.263)	(−0.187)	(−2.474)	(−0.122)	(−3.700)	(2.988)
Observations	627	570	680	578	241	1,017
A-B AR(1) test	−3.680	−4.317	−4.625	−3.078	−2.209	−4.846
[*p*-Value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.027]	[0.000]
A-B AR(2) test	−1.828	−0.798	−1.516	−1.562	−0.368	−1.581
[*p*-Value]	[0.068]	[0.425]	[0.130]	[0.118]	[0.713]	[0.114]
Sargan overid. test	0.72	19.62	18.13	0.93	23.56	15.64
[*p*-Value]	[0.868]	[0.006]	[0.112]	[0.334]	[0.132]	[0.155]
Hansen overid. test	0.38	9.76	9.09	0.20	15.14	11.46
[*p*-Value]	[0.944]	[0.203]	[0.695]	[0.653]	[0.585]	[0.406]
Hausman statistics	4.14	5.35	19.28	13.92	6.68	0.58
[*p*-Value]	[0.995]	[0.980]	[0.115]	[0.379]	[0.946]	[1.000]

Note. SOE is a dummy variable that equals one if a bank is controlled by state or state agencies and zero otherwise. High level is a dummy variable that equals one if the regional financial inclusion index is above the sample mean, and zero otherwise. Listing is a dummy variable that equals one if a bank is listed on the stock exchange and zero otherwise. The dependent variable is NPL. Instrumental variables in our estimation include the second lag of the dependent variable and the first lag of all the independent and control variables. *t-statistics* for coefficient estimates are in parentheses, and standard errors are calculated based on Windmeijer's (2005) finite-sample corrected standard errors. *p*-values for various tests are recorded in square brackets. $^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.1$.

Columns 5 and 6 show the impact of academic leaders on NPLs in banks located in regions with different financial inclusion levels. The level of regional financial inclusion is collected from the Digital Financial Inclusion Index database. This is an index variable, which reflects the innovation and development of financial inclusion across all regions in China. The sample is then divided into two groups based on the mean value of the financial inclusion index across all bank-year observations. The findings show that academic leaders have a negative impact on NPLs in provinces with a higher degree of financial inclusion, but there is no significant impact in regions with a lower degree of financial inclusion. These results indicate that academic leaders can effectively reduce troubled loans for banks located in provinces with a higher financial inclusion level, and are consistent with Chen, Feng, and Wang (2018) who found that financial inclusion plays an important role in maintaining the stability of bank capital flows, and that it has a significant positive impact on the level of NPLs in commercial banks.

4.3.4. Addressing endogeneity: a two-stage least squares approach

A key concern in assessing the relationship between academic bank leaders and NPLs is the potential presence of endogeneity, which may arise from several sources. For instance, omitted variable bias may occur if there are unobserved factors that influence both the appointment of academic leaders and bank performance. In addition, reverse causality is possible – for example, banks with lower NPLs may be more likely to attract or appoint academic leaders, rather than academic leaders causing lower NPLs. To address this concern, the baseline regression model was re-estimated using a two-stage least squares (2SLS) approach.

First, following Rouse et al. (2023), *provincial academic leader proportion* was employed as the first instrumental variable. Specifically, it is defined as the average percentage of academic bank leaders in a province. This variable is plausibly exogenous because it captures regional-level tendencies in academic appointments that are unlikely to be driven by individual bank-level NPL outcomes. It reflects broader regional norms or talent availability, which influence hiring decisions but are not directly determined by a single bank's performance. To examine whether this instrumental variable meets the relevance criteria, a Cragg-Donald test is conducted. It is reported that the Cragg-Donald's Wald F-statistic (183.62) is well above the Stock-Yogo weak identification test of 10% critical value (16.38), indicating the strength of the instrumental variable. The first stage estimation is performed using the variable *Professor* as the dependent variable, and the *provincial academic leader proportion* and other control variables as regressors. Subsequently, the predicted value of academic leader proportion is obtained and included as the main independent variable in the second-stage estimation. Equations [3] and [4] show the first and second stage estimation processes:

$$Professor_{i,t} = Provincial\ academic\ leader_{i,t} + \boldsymbol{X}_{i,t} + \pi_{\mathrm{i}} \tag{3}$$

$$NPL_{i,t} = \widehat{(\mathrm{Professor})}_{i,t} + \boldsymbol{X}_{i,t} + \varepsilon_{\mathrm{i}} \tag{4}$$

Where $\boldsymbol{X}_{i,t}$is a vector of bank i's control variables, π_{i} is the first-stage idiosyncratic error term, and ε_{i} is the second-stage error term.

The second-stage estimation results are presented in Column 1 of Table 7. It is observed that the baseline results hold: the presence of academic leaders can significantly reduce the level of NPLs. It is worth noting that the regression model is exactly identified, as only one instrumental variable is included. Therefore, another instrumental variable, as shown in Column 2, is added to overidentify the model. In this way, both the relevance and exogeneity of instrumental variables can be examined.

Following Reeb and Zhao (2013) and Francis, Hasan, and Wu (2015), '*Transportation*' is used as the second instrumental variable, which equals one if the city where a bank is located has an airport, and zero otherwise. This instrument is theoretically grounded in the idea that academic professionals, due to their frequent travel needs for conferences, research collaborations, and external engagements, are more likely to accept leadership roles in cities with convenient transportation infrastructure. Thus, the presence of an airport serves as a proxy for accessibility, influencing the likelihood of academic appointments without being directly related to a bank's NPL ratio. The rationale for including this variable is that academic bank leaders are typically busy individuals who consider travel accessibility when evaluating job opportunities (Reeb and Zhao 2013). To examine the validity and relevance of these two instrumental variables, both Cragg-Donald and Sargan–Hansen test statistics are calculated. It is reported that the p-value of the Sargan-Hansen statistic is 0.883, implying that the two instrumental variables are exogenous and not correlated with the error terms. In addition, Cragg-Donald's Wald F-statistics (96.06) are well above the Stock-Yogo weak identification tests of 10% critical values (19.93), supporting the relevance of the instrumental variables. As shown in Column 2 of Table 7, the second-stage estimation results indicate that the main findings remain unchanged.

In addition, an alternative definition of '*Professor*' is used. That is, the proportion of academic leaders in Columns 3 and 4 of Table 7 is used to replace the dummy variable that was used in Columns 1 and 2 and the 2SLS regression model is re-estimated. Again, the results confirm that academic bank leaders can effectively lower the level of NPLs. These consistent estimates indicate that endogeneity is not a concern in this paper.

Table 7. Robustness checks: Two-stage least squares (2-SLS) estimation results

	Professor dummy		Professor proportion	
	Column 1	Column 2	Column 3	Column 4
Variables	IV: province	IVs: province and transportation	IV: province	IVs: province and transportation
Professor	−0.421***	−0.426***	−2.791**	−2.762**
	(0.162)	(0.159)	(1.128)	(1.098)
Bank size	−0.277	−0.257	−0.112	−0.132
	(0.827)	(0.816)	(0.906)	(0.888)
Leverage	−1.219***	0.004	0.001	0.001
	(0.056)	(0.007)	(0.007)	(0.007)
ROA	0.004	−1.219***	−1.265***	−1.265***
	(0.007)	(0.056)	(0.057)	(0.057)
Loans to Deposits	0.015***	0.015***	0.016***	0.016***
	(0.002)	(0.002)	(0.002)	(0.002)
Deposits to Assets	0.016***	0.016***	0.017***	0.017***
	(0.002)	(0.002)	(0.002)	(0.002)
Bank age	−0.127***	−0.128***	−0.121***	−0.120***
	(0.040)	(0.040)	(0.039)	(0.039)
Top ownership	−0.272***	−0.272***	−0.241***	−0.241***
	(0.033)	(0.033)	(0.034)	(0.034)
Board size	−0.185*	−0.184*	−0.218**	−0.218**
	(0.104)	(0.104)	(0.105)	(0.105)
Committee	0.039**	0.039**	0.031*	0.031*
	(0.017)	(0.017)	(0.017)	(0.017)
Meetings	−0.001	−0.001	−0.001	−0.001
	(0.005)	(0.005)	(0.005)	(0.005)
Punishment	−0.023	−0.023	−0.010	−0.011
	(0.099)	(0.099)	(0.101)	(0.100)
Constant	2.771	2.708	2.259	2.321
	(2.526)	(2.491)	(2.811)	(2.754)
Observations	1,819	1,819	1,753	1,753
R-squared	0.301	0.300	0.308	0.308
Sargan statistic	Exactly identified	0.022	Exactly identified	0.013
[*p*-Value]		[0.883]		[0.910]
Cragg-Donald (CD) Wald F-statistic	183.618	96.066	181.862	96.507
Stock and Yogo test for critical values (10%)	16.38	19.93	16.38	19.93

Note: This table shows the main regression results whilst addressing endogeneity concerns using a two-stage least square method. The second stage regression results are reported in the table. The instrumental variables include (1): Province, which is defined as the provincial average proportion of bank academic leaders in the specific year; (2). Transportation, which is a dummy variable that equals one if the city that a bank located in has an airport, and zero otherwise. In Columns (1) and (2), the independent variable is a dummy variable that equals one if a bank has at least one academic leader and zero otherwise. In Columns (3) and (4), the independent variable is the proportion of academic leaders in each bank. *standard errors* for coefficient estimates are in parentheses. *p*-values for various tests are recorded in square brackets. ***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$.

4.3.5. Channel of influence

Finally, the channel that academic bank leaders affect the level of NPLs is examined. Two potential channels are proposed: bank overinvestment and shareholder meeting frequency. First, academic bank leaders have the ability and professional knowledge to identify and curb overinvestment. However, non-academic leaders may make a variety of risky investments for their own benefit, creating asset price bubbles and increasing the level of bad loans (Jin et al. 2022). Theoretically, overinvestment may reflect inefficient capital allocation and excessive risk-taking, both of which can lead to higher exposure to default-prone projects. As a result, banks with high overinvestment are more likely to accumulate poor-quality assets, ultimately increasing their NPL ratios. Therefore, it is expected that academic leaders can effectively limit bank overinvestment, which significantly reduces the level of NPLs.

To empirically examine this channel, the variable '*Overinvestment*' is introduced, which refers to a bank's overinvestment level. Following Richardson (2006) and Jin et al. (2022), overinvestment is proxied for by using

the residuals that are calculated from the following model:

$$Inv_{i,t} = \alpha_0 + \alpha_1 Leverage_{i,t-1} + \alpha_2 Cash_{i,t-1} + \alpha_3 Age_{i,t-1} + \alpha_4 Size_{i,t-1} + \alpha_5 LagInv_{i,t-1} + \sum Year + \varepsilon_{i,t} \quad (5)$$

where *Inv* is the total amount of bank *i*'s investment. *Cash* is defined as the ratio of cash holdings to total assets. *LagInv* is the amount of investment in the previous year. *Age, Bank Size* and *Leverage* are defined in Table 1.

A two-step approach to examine this channel is employed,[7] and the results are presented in Columns 1 and 2 of Table 8. Column 1 shows the first-step results: the dependent variable is replaced with *overinvestment* and regressed against academic bank leader and other control variables. It is observed that there is a significant and negative relationship between academic bank leaders and a bank's overinvestment level. Column 2 shows the second-step results: the baseline regression model is re-estimated by incorporating the variable of '*Overinvestment*'. It is reported that there is a negative relationship between academic leaders and NPLs, and a positive relationship between overinvestment and NPLs. These findings support the notion that overinvestment serves as a key mechanism through which poor governance and weak leadership translate into asset quality deterioration. By limiting overinvestment, academic leaders help enhance investment discipline, reduce risk exposure, and ultimately lower the accumulation of NPLs. The results confirm that academic leaders can effectively reduce bank overinvestment, and thereby decrease NPL risk.

The second channel proposed is shareholder meeting frequency and its influence on the relationship between academic bank leaders and NPLs. The rationale is that regular meetings increase shareholder access to bank-related information, reducing information asymmetry and enhancing external monitoring. Meeting frequency serves as a proxy for corporate transparency and governance strength. Academic bank leaders, due to their professional background and commitment to accountability and inclusive decision-making, may be more inclined to hold regular shareholder meetings as part of a broader effort to improve transparency and stakeholder engagement. A higher meeting frequency may also reflect a more robust governance culture in which shareholders actively oversee managerial decisions, including those relating to lending and risk management. This increased scrutiny can discourage opportunistic behavior and improve lending discipline, ultimately reducing the risk of NPLs (Elyasiani and Zhang 2015).

To empirically examine this channel, the variable '*Shareholder*' is introduced, which refers to the number of shareholder meetings held in a year. A two-step approach is adopted to examine this channel, and the results are presented in Columns 3 and 4 of Table 8. Column 3 presents the results relating to the first step. The dependent variable is replaced with shareholder meeting frequency and regressed against academic bank leader and other control variables. The results show that there is a significant and positive relationship between academic bank leaders and a bank's shareholder meeting frequency. Column 4 presents the results of the second step, where the baseline regression model is re-estimated by incorporating the variable of shareholder meeting frequency. It is reported that there is a negative relationship between academic leaders and NPLs, and between shareholder meeting frequency and NPLs. These findings reinforce the idea that academic leaders, through encouraging more frequent shareholder engagement, foster a governance environment that promotes transparency and accountability, leading to more prudent lending practices and lower NPL ratios. In other words, the results confirm that having academic bank leaders on the board can increase the frequency of shareholder meetings, and, with increased level of monitoring from shareholders, a bank's level of NPLs may be significantly reduced.

5. Conclusion

This paper examines whether and how academic bank leaders affect the level of NPLs. Using a sample of Chinese commercial banks for the period 2007–2020, the study shows that banks with academic leaders are associated with lower levels of NPLs. While we cannot directly observe behavioural traits, such as caution or rigour, this pattern is consistent with the notion that academic leaders may bring a more analytical and disciplined approach to credit oversight, potentially leading to more prudent lending practices. In addition, academic bank leaders may reduce NPLs more significantly when they are female, relatively young, and have an overseas educational background.

Table 8. Robustness checks: Channel analysis, A two-step method.

	(1) Overinvestment		(2) Shareholder meeting	
Variables	First step overinvestment	Second step NPL	First step Shareholder meeting	Second step NPL
Professor	−0.037*	−0.084***	0.155**	−0.214***
	(−1.653)	(−2.856)	(2.214)	(−2.754)
Overinvestment		0.067**		
		(2.530)		
Shareholder				−0.162***
				(−3.681)
L.Overinvestment	0.838***			
	(31.590)			
L.Shareholder			0.246***	
			(9.092)	
L.NPL		0.624***		0.634***
		(29.085)		(16.153)
Bank size	0.355	0.834**	−0.857	2.635**
	(0.821)	(2.431)	(−0.973)	(2.264)
Leverage	0.001	−0.002	−0.005	−0.060***
	(0.054)	(−0.424)	(−0.401)	(−4.900)
ROA	0.077*	−0.378***	−0.074	−0.343***
	(1.718)	(−9.368)	(−0.807)	(−3.466)
Loans to Deposits	−0.001	0.001	−0.004	−0.006***
	(−0.332)	(1.026)	(−1.437)	(−2.774)
Deposits to Assets	−0.002*	−0.001	−0.005*	−0.001
	(−1.804)	(−0.050)	(−1.667)	(−0.581)
Bank age	0.009	−0.085***	0.236***	−0.100*
	(0.782)	(−2.742)	(3.807)	(−1.871)
Top ownership	−0.038	−0.089***	0.260***	0.012
	(−0.854)	(−3.975)	(4.183)	(0.280)
Board size	−0.011	−0.155**	0.340*	0.109
	(−0.085)	(−2.483)	(1.951)	(0.447)
Committee	−0.001	0.001	−0.004	−0.008
	(−0.129)	(0.113)	(−0.218)	(−0.245)
Meetings	−0.007	−0.002	0.034***	−0.002
	(−1.204)	(−0.698)	(4.700)	(−0.178)
Punishment	0.045	0.077	−0.207**	−0.287**
	(0.957)	(1.075)	(−2.286)	(−2.005)
Constant	−0.811	−1.021	2.620	−5.939*
	(−0.797)	(−0.986)	(0.996)	(−1.737)
Observations	1,238	1,238	1,238	1,238
A-B AR(1) test	−4.126	−4.975	−7.229	−4.824
[*p*-Value]	[0.000]	[0.000]	[0.000]	[0.000]
A-B AR(2) test	0.960	−1.598	−0.322	−1.531
[*p*-Value]	[0.337]	[0.110]	[0.747]	[0.126]
Sargan overid. test	27.20	11.50	78.23	4.49
[*p*-Value]	[0.295]	[0.042]	[0.001]	[0.481]
Hansen overid. test	24.67	3.25	61.44	2.50
[*p*-Value]	[0.424]	[0.661]	[0.034]	[0.776]
Hausman statistics	13.47	16.46	1.85	22.79
[*p*-Value]	[0.412]	[0.286]	[0.999]	[0.064]

Note. In Column 1, the dependent variable is *Overinvestment*, which refers to a bank's overinvestment level. In Column 3, the dependent variable is *Shareholder*, which is defined as the number of shareholder meetings held in a year. In Columns 2 and 4, the dependent variable is NPL. Instrumental variables in Columns 2 and 4 include the second lag of the dependent variable and the first lag of all the independent and control variables, including *Professor, Bank Size, Leverage, ROA, Loans to Deposits, Deposits to Assets, Bank age, Top ownership, Board size, Committee, Meetings, and Punishment*. *t-statistics* for coefficient estimates are in parentheses, and standard errors are calculated based on Windmeijer's (2005) finite-sample corrected standard errors. ***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$.

Several robustness tests are conducted, and the findings remain consistent with the baseline results. That is, the results are robust to an alternative measure of the proportion of academic leaders as the dependent variable. In addition, the paper finds that academic independent directors and board of supervisors can reduce the

level of NPLs, whereas academic directors and senior management have no significant impact on the level of a bank's NPLs. Moreover, the relationship between academic leaders and the level of NPLs varies depending on the bank ownership structure, listing status, and regional financial inclusion level. Specifically, the negative relationship between academic leaders and NPLs is more pronounced for banks that are state-owned, listed on the stock exchange, or those that are located in provinces with a higher degree of financial inclusion. Endogeneity concerns are addressed using a two-stage least squares approach. The results confirm that the main findings remain unchanged. The channel that academic bank leaders affect the level of NPLs is also examined, and it was identified that curbing corporate overinvestment and increasing shareholder meetings are two potential channels.

The findings of this study provide insights for banks and policy-makers who are concerned with reducing the risk of bad loans and protecting the interests of minority shareholders. In particular, by hiring academic leaders, especially academic independent directors and boards of supervisors, the level of troubled loans may be significantly reduced. This reduction is due to academic bank leaders' subject-relevant knowledge and expertise, their characteristics of demanding precision and prudence, as well as their need for the protection of their reputation. Building on these findings, our study offers a clear implication for regulatory and governance policy. Given the empirical evidence that academic leaders are associated with a lower level of NPLs, particularly when serving in independent or supervisory roles, we recommend that regulatory bodies encourage (rather than mandate) their inclusion on bank boards.[8] Regulators can play a proactive role by issuing soft guidelines, best practice frameworks, or disclosure requirements that promote academic expertise as a valuable governance asset. For example, central banks or financial supervisory authorities might highlight academic qualifications as desirable criteria in board nomination processes. Similarly, corporate governance codes could recommend that firms disclose the academic credentials of board members within their board skills matrix. Such measures would preserve flexibility while steering the industry toward evidence-based, high-quality oversight.

The study also reveals that the effectiveness of academic leadership is further enhanced when combined with characteristics like gender diversity, international education, and younger age. These interactions point to the importance of not treating board diversity and expertise as mutually exclusive categories. Instead, they should be viewed holistically, with composite attributes (e.g. female professors with overseas training) offering higher governance utility. This distinction may guide listing rules, board nomination practices, or central bank guidelines that seek to strengthen board oversight capacity without relying solely on traditional financial expertise or political affiliations.

In addition, the evidence that academic independent directors and academic supervisors, but not academic executives, drive the reduction in NPLs supports a policy distinction between oversight and managerial roles in board design. It implies that academic professionals are most effective in positions that require objectivity and monitoring, rather than operational decision-making. Therefore, regulators and banks could design board structures that strategically position academics in supervisory or independent roles, rather than in executive management.

The finding that academic leadership has a stronger effect in state-owned and listed banks, as well as in regions with higher financial inclusion, provides insights for differentiated policy interventions. In developing economies or regions with rapid credit expansion, appointing academic leaders may be particularly effective in containing systemic risks. Thus, targeted incentives or governance reforms, such as requiring a minimum percentage of independent academic directors in publicly listed or state-owned financial institutions, could serve as a policy tool for enhancing credit discipline.

Finally, the channel analysis shows that academic leaders influence bank risk both by curbing overinvestment and increasing shareholder engagement. These mechanisms align with core regulatory objectives around capital allocation efficiency and stakeholder transparency. The results thus support the adoption of governance-based risk management principles in banking regulation, where board composition is treated not just as a compliance issue, but as a proactive lever for improving asset quality and financial stability. Together, these insights contribute to a more evidence-based and targeted approach to board governance in banking institutions – an increasingly critical need in light of post-crisis regulatory frameworks such as Basel III and the growing expectations for board accountability in emerging markets.

There are some limitations of this research. For example, the research focuses on only one particular skill of bank senior members – that is, academic skills. However, directors' competencies are inherently multi-dimensional, encompassing not only academic expertise but also industry-specific knowledge, financial acumen, strategic leadership, and interpersonal or managerial capabilities. These complementary skills may play a critical role in shaping loan quality and risk oversight. Due to data limitations, we are unable to capture the full spectrum of directors' prior professional experience or leadership attributes, which constrains our ability to assess how these additional factors interact with or mediate the effects of academic background. As such, while our findings suggest that academic credentials are associated with improved loan outcomes, we caution that this effect may partly reflect correlated unobserved traits or synergies with other skills not captured in our dataset. Future research would benefit from a more holistic approach that incorporates a broader array of director attributes, ideally combining quantitative and qualitative data sources. In addition, the study does not differentiate between the academic disciplines of bank leaders. It is plausible that professors with expertise in finance, accounting, or law may be particularly effective in improving loan quality due to their technical knowledge. Future research could explore whether the effectiveness of academic leaders varies based on their field of specialisation. Building on these limitations, future research could explore whether the observed effects of academic leaders hold in other institutional settings, particularly in cross-country contexts, or whether they interact with evolving regulatory frameworks such as Basel III/IV.

Notes

1. Since 2015, the Chinese government has discouraged appointing public servants above certain ranks to listed firms, while encouraging the appointment of academics who are not in administrative positions (Xiang and Zhu 2020).
2. Other theories, such as institutional theory and resource dependence theory, have been applied to studies on board directors and board characteristics (e.g. Young, Stedham, and Beekun 2000; Bhatt and Bhattacharya 2015). However, this paper adopts a combined framework of human and social capital theory and Upper Echelons theory, which we believe best captures the unique characteristics of academic directors, as well as the strengths and benefits they bring to board-level risk management.
3. In China, academy fellows are those who have the highest academic recognition in their research fields.
4. Prior studies have shown that, among the board members of S&P 1500 corporations, around 14.3% are independent academic directors (Francis, Hasan, and Wu 2015).
5. While System GMM is a powerful tool for addressing endogeneity through its sophisticated use of internal instruments (Arellano and Bond 1991; Blundell and Bond 1998), its framework is not ideally suited for incorporating external instruments. The estimator's fundamental design and comparative advantage lie in its ability to generate a matrix of instruments from within the model itself. This reliance on internally generated moment conditions is a cornerstone of the method, whose robustness and effectiveness in mitigating dynamic panel bias are supported by studies in the corporate finance fields (such as Ha et al. 2016; Kryzanowski and Mohebshahedin 2016; Huang et al. 2023). Consequently, as Roodman (2009) states, the quintessential GMM application is one without external instruments. Therefore, when a researcher possesses a strong and credible external instrument, alternative IV-based approaches may offer a more transparent and direct path to identification (please refer to the robustness test 4.3.4).
6. Nonetheless, it is important to acknowledge potential limitations. System GMM may suffer from instrument proliferation if not carefully managed, which may weaken the Hansen test and lead to overfitting of endogenous variables. To address this, we limit the lag depth and collapse the instrument matrix where appropriate.
7. The two-step strategy involves first validating that the proposed mediators (*overinvestment* and *shareholder meeting*) are indeed influenced by the academic leader, and then showing that they account for a significant portion of the leader's effect on NPLs. The two steps are motivated by the logic of mediation analysis, which is commonly used in the empirical corporate finance literature to identify indirect effects and underlying mechanisms (e.g. Wintoki, Linck, and Netter 2012). This two-step approach has also been adopted in recent studies, such as Wang, Chen, and Zhang (2025).
8. Mandating academic appointments may risk constraining board composition strategies or overlook sectoral and institutional differences.

Disclosure statement

No potential conflict of interest was reported by the authors.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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References

Adams, R. B., J. de Haan, S. Terjesen, and H. van Ees. 2015. "Board Diversity: Moving the Field Forward." *Corporate Governance: An International Review* 23 (2): 77–82. https://doi.org/10.1111/corg.12106

Adams, R. B., and D. Ferreira. 2009. "Women in the Boardroom and Their Impact on Governance and Performance☆." *Journal of Financial Economics* 94 (2): 291–309. https://doi.org/10.1016/j.jfineco.2008.10.007

Altman, E. I., M. Iwanicz-Drozdowska, E. K. Laitinen, and A. Suvas. 2017. "Financial Distress Prediction in an International Context: A Review and Empirical Analysis of Altman's Z-Score Model." *Journal of International Financial Management & Accounting* 28 (2): 131–171. https://doi.org/10.1111/jifm.12053

Anderson, T. S., C. B. Good, and W. F. Gellad. 2015. "Prevalence and Compensation of Academic Leaders, Professors, and Trustees on Publicly Traded US Healthcare Company Boards of Directors: Cross Sectional Study." *BMJ* 351: 1–9.

Arellano, M., and S. R. Bond. 1991. "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations." *Review of Economic Studies* 58 (2): 277–297. https://doi.org/10.2307/2297968

Arellano, M., and O. Bover. 1995. "Another Look at the Instrumental Variable Estimation of Error-Components Models." *Journal of Econometrics* 68 (1): 29–51. https://doi.org/10.1016/0304-4076(94)01642-D

Audretsch, D. B., and E. Lehmann. 2006. "Entrepreneurial Access and Absorption of Knowledge Spillovers: Strategic Board and Managerial Composition for Competitive Advantage." *Journal of Small Business Management* 44 (2): 155–166. https://doi.org/10.1111/j.1540-627X.2006.00161.x

Audretsch, D. B., and P. E. Stephan. 1996. "Company-scientist Locational Links: The Case of Biotechnology." *The American Economic Review* 86 (3): 641–652.

Barber, B. M., and T. Odean. 2001. "Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment." *The Quarterly Journal of Economics* 116 (1): 261–292. https://doi.org/10.1162/003355301556400

Barsky, R. B., F. T. Juster, M. S. Kimball, and M. D. Shapiro. 1997. "Preference Parameters and Behavioral Heterogeneity: An Experimental Approach in the Health and Retirement Study." *The Quarterly Journal of Economics* 112 (2): 537–579. https://doi.org/10.1162/003355397555280

Basel Committee on Banking Supervision (BCBS). 2015. "Corporate Governance Principles for Banks." https://www.bis.org/bcbs/publ/d328.pdf.

Becker, G. S. 1918. *Human Capital: A Theoretical and Empirical Analyses, with Special Reference to Education*. Chicago: University of Chicago Press.

Bhatt, R. R., and S. Bhattacharya. 2015. "Do Board Characteristics Impact Firm Performance? An Agency and Resource Dependency Theory Perspective." *Asia-Pacific Journal of Management Research and Innovation* 11 (4): 274–287. https://doi.org/10.1177/2319510X15602973

Bleck, A., and X. Liu. 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

Blundell, R., and S. Bond. 1998. "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models." *Journal of Econometrics* 87 (1): 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8

Boeker, W. 1997. "Executive Migration and Strategic Change: The Effect of top Manager Movement on Product-Market Entry." *Administrative Science Quarterly* 42:: 213–236. https://doi.org/10.2307/2393919

Boyd, B. 1990. "Corporate Linkages and Organizational Environment: A Test of the Resource Dependence Model." *Strategic Management Journal* 11 (6): 419–430. https://doi.org/10.1002/smj.4250110602

Bromiley, P., and D. Rau. 2016. "Social, Behavioral, and Cognitive Influences on Upper Echelons during Strategy Process: A Literature Review." *Journal of Management* 42 (1): 174–202. https://doi.org/10.1177/0149206315617240

Carpenter, M. A., and J. W. Fredrickson. 2001. "Top Management Teams, Global Strategic Posture, and the Moderating Role of Uncertainty." *Academy of Management Journal* 44 (3): 533–545. https://doi.org/10.2307/3069368
Carpenter, M. A., M. A. Geletkanycz, and W. G. Sanders. 2004. "Upper Echelons Research Revisited: Antecedents, Elements, and Consequences of top Management Team Composition." *Journal of Management* 30 (6): 749–778. https://doi.org/10.1016/j.jm.2004.06.001
Chen, F. W., Y. Feng, and W. Wang. 2018. "Impacts of Financial Inclusion on non-performing Loans of Commercial Banks: Evidence from China." *Sustainability* 10 (9): 3084. https://doi.org/10.3390/su10093084
Chen, J., A. Garel, and A. Tourani-Rad. 2019. "The Value of Academics: Evidence from Academic Independent Director Resignations in China." *Journal of Corporate Finance* 58:393–414. https://doi.org/10.1016/j.jcorpfin.2019.06.003
Chen, J., W. S. Leung, W. Song, and M. Goergen. 2019. "Why Female Board Representation Matters: The Role of Female Directors in Reducing Male CEO Overconfidence." *Journal of Empirical Finance* 53:70–90. https://doi.org/10.1016/j.jempfin.2019.06.002
Cho, C. H., J. H. Jung, B. Kwak, J. Lee, and C. Yoo. 2017. "Professors on the Board: Do They Contribute to Society Outside the Classroom?" *Journal of Business Ethics* 141 (2): 393–409. https://doi.org/10.1007/s10551-015-2718-x
Cho, S. Y., and S. K. Kim. 2017. "Horizon Problem and Firm Innovation: The Influence of CEO Career Horizon, Exploitation and Exploration on Breakthrough Innovations." *Research Policy* 46 (10): 1801–1809. https://doi.org/10.1016/j.respol.2017.08.007
Chou, H. I., H. Chung, and X. Yin. 2013. "Attendance of Board Meetings and Company Performance: Evidence from Taiwan." *Journal of Banking & Finance* 37 (11): 4157–4171. https://doi.org/10.1016/j.jbankfin.2013.07.028
Craig Nichols, D., J. M. Wahlen, and M. M. Wieland, 2009. "Publicly Traded versus Privately Held: Implications for Conditional Conservatism in Bank Accounting." *Review of Accounting Studies* 14 (1): 88–122. https://doi.org/10.1007/s11142-008-9082-3
Croson, R., and U. Gneezy. 2009. "Gender Differences in Preferences." *Journal of Economic Literature* 47 (2): 448–474. https://doi.org/10.1257/jel.47.2.448
Dalziel, T., R. J. Gentry, and M. Bowerman. 2011. "An Integrated Agency–Resource Dependence View of the Influence of Directors' Human and Relational Capital on Firms' R&D Spending." *Journal of Management Studies* 48 (6): 1217–1242. https://doi.org/10.1111/j.1467-6486.2010.01003.x
Datta, S., and M. Iskandar-Datta. 2014. "Upper-Echelon Executive Human Capital and Compensation: Generalist vs Specialist Skills." *Strategic Management Journal* 35 (12): 1853–1866. https://doi.org/10.1002/smj.2267
Elamer, A. A., and V. Utham. 2024. "Cash Is Queen? Impact of Gender-Diverse Boards on Firms' Cash Holdings during COVID-19." *International Review of Financial Analysis* 95:103490. https://doi.org/10.1016/j.irfa.2024.103490
Elyasiani, E., and L. Zhang. 2015. "Bank Holding Company Performance, Risk, and "Busy" Board of Directors." *Journal of Banking & Finance* 60:239–251. https://doi.org/10.1016/j.jbankfin.2015.08.022
Faccio, M. 2006. "Politically Connected Firms." *American Economic Review* 96 (1): 369–386. https://doi.org/10.1257/000282806776157704
Faccio, M., M. T. Marchica, and R. Mura. 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
Faleye, O., R. Hoitash, and U. Hoitash. 2018. "Industry Expertise on Corporate Boards." *Review of Quantitative Finance and Accounting* 50 (2): 441–479. https://doi.org/10.1007/s11156-017-0635-z
Forbes, D. P., and F. J. Milliken. 1999. "Cognition and Corporate Governance: Understanding Boards of Directors as Strategic Decision-Making Groups." *The Academy of Management Review* 24 (3): 489–505. https://doi.org/10.2307/259138
Francis, B., I. Hasan, and Q. Wu. 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
Gan, H. 2023. "How Do CEOs Make Investment Decisions in Their Early Years of Tenure? Evidence from Investment Efficiency." *Journal of Corporate Accounting & Finance* 34 (3): 64–79. https://doi.org/10.1002/jcaf.22613
Gardazi, S. S. N., A. F. S. Hassan, and J. B. Johari. 2020. "Board of Directors Attributes and Sustainability Performance in the Energy Industry." *The Journal of Asian Finance, Economics and Business* 7 (12): 317–328. https://doi.org/10.13106/jafeb.2020.vol7.no12.317
Ghosh, S. 2016. "Banker on Board and Innovative Activity." *Journal of Business Research* 69 (10): 4205–4214. https://doi.org/10.1016/j.jbusres.2016.03.004
Goldman, E., J. Rocholl, and J. So. 2008. "Do Politically Connected Boards Affect Firm Value?" *Review of Financial Studies* 22 (6): 2331–2360. https://doi.org/10.1093/rfs/hhn088
Guan, R., H. Zheng, J. Hu, Q. Fang, and R. Ren. 2017. "The Higher Carbon Intensity of Loans, the Higher non-performing Loan Ratio: The Case of China." *Sustainability* 9 (4): 667. https://doi.org/10.3390/su9040667
Gulamhussen, M. A., and S. F. Santa. 2015. "Female Directors in Bank Boardrooms and Their Influence on Performance and Risk-Taking." *Global Finance Journal* 28:10–23. https://doi.org/10.1016/j.gfj.2015.11.002
Ha, W., J. Yi, Y. Yuan, and J. Zhang. 2016. "The Dynamic Effect of Rural-to-Urban Migration on Inequality in Source Villages: System GMM Estimates from Rural China." *China Economic Review* 37:27–39. https://doi.org/10.1016/j.chieco.2015.09.002
Hambrick, D. C. 2007. "Upper Echelons Theory: An Update." *Academy of Management Review* 32 (2): 334–343. https://doi.org/10.5465/amr.2007.24345254
Hambrick, D. C., and P. A. Mason. 1984. "Upper Echelons: The Organization as a Reflection of Its top Managers." *Academy of Management Review* 9 (2): 193–206. https://doi.org/10.2307/258434
Hamzah, A. H., and A. H. Zulkafli. 2014. "Board Diversity and Corporate Expropriation." *Procedia - Social and Behavioral Sciences* 164:562–568. https://doi.org/10.1016/j.sbspro.2014.11.146

Hill, S. 1995. "The Social Organization of Boards of Directors." *British Journal of Sociology* 46:: 245–278. https://doi.org/10.2307/591788
Hillman, A. J. 2005. "Politicians on the Board of Directors: Do Connections Affect the Bottom Line?" *Journal of Management* 31 (3): 464–481. https://doi.org/10.1177/0149206304272187
Hu, J. L., Y. Li, and Y. H. Chiu. 2004. "Ownership and Nonperforming Loans: Evidence from Taiwan's Banks." *The Developing Economies* 42 (3): 405–420. https://doi.org/10.1111/j.1746-1049.2004.tb00945.x
Huang, C., X. Chang, Y. Wang, and N. Li. 2023. "Do Major Customers Encourage Innovative Sustainable Development? Empirical Evidence from Corporate Green Innovation in China." *Business Strategy and the Environment* 32 (1): 163–184. https://doi.org/10.1002/bse.3123
Huang, W., and B. Teklay. 2021. "Business Professors in the Boardroom: Can They Walk-the-Talk?" *Finance Research Letters* 39:101590. https://doi.org/10.1016/j.frl.2020.101590
Huang, Y. S., and C. J. Wang. 2015. "Corporate Governance and Risk-Taking of Chinese Firms: The Role of Board Size." *International Review of Economics & Finance* 37:96–113. https://doi.org/10.1016/j.iref.2014.11.016
Hui, Z., H. Li, and A. A. Elamer. 2024. "Financing Sustainability: How Environmental Disclosures Shape Bank Lending Decisions in Emerging Markets." *Corporate Social Responsibility and Environmental Management* 31 (5): 3940–3967. https://doi.org/10.1002/csr.2789
Hutton, A. P., A. J. Marcus, and H. Tehranian. 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
Hwang, B. H., and S. Kim. 2009. "It Pays to Have Friends." *Journal of Financial Economics* 93 (1): 138–158. https://doi.org/10.1016/j.jfineco.2008.07.005
Ibrahim, A., and O. A. Yahaya. 2023. "Board Demographic Characteristics and Cost of Debt Decisions." *Journal of Contemporary Accounting* 5 (2): 126–143.
Jeremias, J., and L. Gani. 2014. "The Impact of Board Capital and Board Characteristics on Firm Performance." *The British Accounting Review* 46 (2): 135–153. https://doi.org/10.1016/j.bar.2013.12.001
Jianakoplos, N. A., and A. Bernasek. 1998. "Are Women More Risk Averse?" *Economic Inquiry* 36 (4): 620–630. https://doi.org/10.1111/j.1465-7295.1998.tb01740.x
Jiang, B., and P. J. Murphy. 2007. "Do Business School Professors Make Good Executive Managers?" *Academy of Management Perspectives* 21 (3): 29–50. https://doi.org/10.5465/amp.2007.26421237
Jiang, G., C. M. Lee, and H. Yue. 2010. "Tunneling through Intercorporate Loans: The China Experience☆." *Journal of Financial Economics* 98 (1): 1–20. https://doi.org/10.1016/j.jfineco.2010.05.002
Jin, H. M., Z. Q. Su, L. Wang, and Z. Xiao. 2022. "Do Academic Independent Directors Matter? Evidence from Stock Price Crash Risk." *Journal of Business Research* 144:1129–1148. https://doi.org/10.1016/j.jbusres.2022.02.054
Jones, L., and N. Fulop. 2021. "The Role of Professional Elites in Healthcare Governance: Exploring the Work of the Medical Director." *Social Science & Medicine* 277:113882. https://doi.org/10.1016/j.socscimed.2021.113882
Kaiser, U., H. C. Kongsted, K. Laursen, and A. K. Ejsing. 2018. "Experience Matters: The Role of Academic Scientist Mobility for Industrial Innovation." *Strategic Management Journal* 39 (7): 1935–1958. https://doi.org/10.1002/smj.2907
Kellaway, L. 2011. "Female Quotas Would Target the Wrong Women." *Financial Times*, February 28.
Khan, H. U. R., W. B. Khidmat, M. D. Habib, and S. Awan. 2022. "Academic Directors in Board and Corporate Expropriation: Evidence from China." *Managerial and Decision Economics* 43 (2): 372–397. https://doi.org/10.1002/mde.3388
Khurana, I. K., W. J. Moser, and K. K. Raman. 2018. "Tax Avoidance, Managerial Ability, and Investment Efficiency." *Abacus* 54 (4): 547–575. https://doi.org/10.1111/abac.12142
Kim, J. B., and L. Zhang. 2016. "Accounting Conservatism and Stock Price Crash Risk: Firm-Level Evidence." *Contemporary Accounting Research* 33 (1): 412–441. https://doi.org/10.1111/1911-3846.12112
Kim, W. S., K. Park, and S. H. Lee. 2018. "Corporate Social Responsibility, Ownership Structure, and Firm Value: Evidence from Korea." *Sustainability* 10 (7): 2497. https://doi.org/10.3390/su10072497
Kotha, R., G. George, and K. Srikanth. 2013. "Bridging the Mutual Knowledge gap: Coordination and the Commercialization of University Science." *Academy of Management Journal* 56 (2): 498–524. https://doi.org/10.5465/amj.2010.0948
Kothari, S. P., S. Shu, and P. D. Wysocki. 2009. "Do Managers Withhold Bad News?" *Journal of Accounting Research* 47 (1): 241–276. https://doi.org/10.1111/j.1475-679X.2008.00318.x
Kryzanowski, L., J. Liu, and J. Zhang. 2023. "Effect of COVID-19 on Non-performing Loans in China." *Finance Research Letters* 52:103372. https://doi.org/10.1016/j.frl.2022.103372
Kryzanowski, L., and M. Mohebshahedin. 2016. "Board Governance, Monetary Interest, and Closed-end Fund Performance." *Journal of Corporate Finance* 38:196–217. https://doi.org/10.1016/j.jcorpfin.2016.01.010
Lehn, K. M., S. Patro, and M. Zhao. 2009. "Determinants of the Size and Composition of US Corporate Boards: 1935–2000." *Financial Management* 38 (4): 747–780. https://doi.org/10.1111/j.1755-053X.2009.01055.x
Lester, R. H., A. Hillman, A. Zardkoohi, and A. A. Cannella Jr. 2008. "Former Government Officials as Outside Directors: The Role of Human and Social Capital." *Academy of Management Journal* 51 (5): 999–1013. https://doi.org/10.5465/amj.2008.34789675
Levi, M., K. Li, and F. Zhang. 2014. "Director Gender and Mergers and Acquisitions." *Journal of Corporate Finance* 28:185–200. https://doi.org/10.1016/j.jcorpfin.2013.11.005
Li, S., Y. Quan, G. G. Tian, K. T. Wang, and S. H. Wu. 2022. "Academy Fellow Independent Directors and Innovation." *Asia Pacific Journal of Management* 39 (1): 103–148. https://doi.org/10.1007/s10490-020-09749-3

Li, X., A. Low, and A. K. Makhija. 2017. "Career Concerns and the Busy Life of the Young CEO." *Journal of Corporate Finance* 47:88–109. https://doi.org/10.1016/j.jcorpfin.2017.09.006
Liu, R., F. Mai, Z. Shan, and Y. Wu. 2020. "Predicting Shareholder Litigation on Insider Trading from Financial Text: An Interpretable Deep Learning Approach." *Information & Management* 57 (8): 103387. https://doi.org/10.1016/j.im.2020.103387
Liu, Y. 2020. "The Comparative and Interactive Effects of Political, Academic and Financial Directors." *International Review of Economics & Finance* 70:546–565. https://doi.org/10.1016/j.iref.2020.08.003
Liu, Y., Z. Wei, and F. Xie. 2014. "Do Women Directors Improve Firm Performance in China?" *Journal of Corporate Finance* 28:169–184. https://doi.org/10.1016/j.jcorpfin.2013.11.016
Liu, Y., F. Xie, and Z. Xu. 2019. "Board Business Connections and Firm Profitability: Evidence from China." *Emerging Markets Finance and Trade* 55 (9): 1954–1968. https://doi.org/10.1080/1540496X.2018.1498332
Marie, M., B. Qi, A. A. Elamer, I. N. Khatatbeh, and E. Al-Fakir Al Rabab'a. 2024. "How Does Board Gender Diversity Drive the ESG Performance-Cash Holdings Relationship? Evidence from China." *International Journal of Finance & Economics* 30: 2705–2723.
Mischel, W. 1977. "The Interaction of Person and Situation. Personality at the Crossroads." *Current Issues in Interactional Psychology* 333:352.
Mizruchi, M. S., and L. B. Stearns. 1994. "A Longitudinal Study of Borrowing by Large American Corporations." *Administrative Science Quarterly* 39:: 118–140. https://doi.org/10.2307/2393496
Nahapiet, J., and S. Ghoshal. 1998. "Social Capital, Intellectual Capital, and the Organizational Advantage." *The Academy of Management Review* 23 (2): 242–266. https://doi.org/10.2307/259373
Nekhili, M., and H. Gatfaoui. 2013. "Are Demographic Attributes and Firm Characteristics Drivers of Gender Diversity? Investigating Women's Positions on French Boards of Directors." *Journal of Business Ethics* 118 (2): 227–249. https://doi.org/10.1007/s10551-012-1576-z
Nguyen, B. D., and K. M. Nielsen. 2010. "The Value of Independent Directors: Evidence from Sudden Deaths☆." *Journal of Financial Economics* 98 (3): 550–567. https://doi.org/10.1016/j.jfineco.2010.07.004
Niederle, M., and L. Vesterlund. 2007. "Do Women shy Away from Competition? Do Men Compete Too Much?" *The Quarterly Journal of Economics* 122 (3): 1067–1101. https://doi.org/10.1162/qjec.122.3.1067
Nielsen, B. B., and S. Nielsen. 2013. "Top Management Team Nationality Diversity and Firm Performance: A Multilevel Study." *Strategic Management Journal* 34 (3): 373–382. https://doi.org/10.1002/smj.2021
Oh, W. Y., Y. K. Chang, and Z. Cheng. 2016. "When CEO Career Horizon Problems Matter for Corporate Social Responsibility: The Moderating Roles of Industry-Level Discretion and Blockholder Ownership." *Journal of Business Ethics* 133 (2): 279–291. https://doi.org/10.1007/s10551-014-2397-z
Owusu, A., F. Kwabi, R. Owusu-Mensah, and A. A. Elamer. 2023. "Lead Independent Director, Managerial Risk-Taking, and Cost of Debt: Evidence from UK." *Journal of International Accounting, Auditing and Taxation* 53:100576. https://doi.org/10.1016/j.intaccaudtax.2023.100576
Pang, J., X. Zhang, and X. Zhou. 2020. "From Classroom to Boardroom: The Value of Academic Independent Directors in China." *Pacific-Basin Finance Journal* 62:101319. https://doi.org/10.1016/j.pacfin.2020.101319
Perryman, A. A., G. D. Fernando, and A. Tripathy. 2016. "Do Gender Differences Persist? An Examination of Gender Diversity on Firm Performance, Risk, and Executive Compensation." *Journal of Business Research* 69 (2): 579–586. https://doi.org/10.1016/j.jbusres.2015.05.013
Peterson, C. A., and J. Philpot. 2009. "Roles of Academic Directors on US Fortune 500 Boards." *Corporate Governance: The International Journal of Business in Society* 9 (2): 202–215. https://doi.org/10.1108/14720700910946631
Quan, Y., and S. Li. 2017. "Are Academic Independent Directors Punished More Severely When They Engage in Violations?" *China Journal of Accounting Research* 10 (1): 71–86. https://doi.org/10.1016/j.cjar.2016.10.002
Reeb, D. M., and W. Zhao. 2013. "Director Capital and Corporate Disclosure Quality." *Journal of Accounting and Public Policy* 32 (4): 191–212. https://doi.org/10.1016/j.jaccpubpol.2012.11.003
Richardson, S. 2006. "Over-investment of Free Cash Flow." *Review of Accounting Studies* 11 (2-3): 159–189. https://doi.org/10.1007/s11142-006-9012-1
Roodman, D. 2009. "How to Do xtabond2: An Introduction to Difference and System GMM in Stata." *The Stata Journal: Promoting Communications on Statistics and Stata* 9 (1): 86–136. https://doi.org/10.1177/1536867X0900900106
Rouse, M., R. S. D. Ottemoesoe, Y. Wang, and Y. Zhang. 2023. "Do Female Independent Directors Reduce Corporate Risk Taking during COVID-19?." *Asia-Pacific Journal of Accounting & Economics* 31: 1–20.
Salas, V., and J. Saurina. 2002. "Credit Risk in two Institutional Regimes: Spanish Commercial and Savings Banks." *Journal of Financial Services Research* 22 (3): 203–224. https://doi.org/10.1023/A:1019781109676
Serfling, M. A. 2014. "CEO Age and the Riskiness of Corporate Policies." *Journal of Corporate Finance* 25:251–273. https://doi.org/10.1016/j.jcorpfin.2013.12.013
Serrano, A. S. 2021. "The Impact of non-performing Loans on Bank Lending in Europe: An Empirical Analysis." *The North American Journal of Economics and Finance* 55:101312. https://doi.org/10.1016/j.najef.2020.101312
Shi, H., H. Xu, and X. Zhang. 2018. "Do Politically Connected Independent Directors Create or Destroy Value?" *Journal of Business Research* 83:82–96. https://doi.org/10.1016/j.jbusres.2017.10.009
Sierra-Morán, J., L. Cabeza-García, N. González-Álvarez, and J. Botella. 2024. "The Board of Directors and Firm Innovation: A Meta-Analytical Review." *BRQ Business Research Quarterly* 27 (2): 182–207. https://doi.org/10.1177/23409444211039856

Singh, M., and W. N. Davidson, III. 2003. "Agency Costs, Ownership Structure and Corporate Governance Mechanisms." *Journal of Banking & Finance* 27 (5): 793–816. https://doi.org/10.1016/S0378-4266(01)00260-6
Singh, S., N. Tabassum, T. K. Darwish, and G. Batsakis. 2018. "Corporate Governance and Tobin's Q as a Measure of Organizational Performance." *British Journal of Management* 29 (1): 171–190. https://doi.org/10.1111/1467-8551.12237
Singh, V., S. Terjesen, and S. Vinnicombe. 2008. "Newly Appointed Directors in the Boardroom: How Do Women and Men Differ?" *European Management Journal* 26 (1): 48–58. https://doi.org/10.1016/j.emj.2007.10.002
Sosik, J. J., W. A. Gentry, and J. U. Chun. 2012. "The Value of Virtue in the Upper Echelons: A Multisource Examination of Executive Character Strengths and Performance." *The Leadership Quarterly* 23 (3): 367–382. https://doi.org/10.1016/j.leaqua.2011.08.010
Tarchouna, A., B. Jarraya, and A. Bouri. 2021. "Do Board Characteristics and Ownership Structure Matter for Bank Non-performing Loans? Empirical Evidence from US Commercial Banks." *Journal of Management and Governance* 26: 1–40.
Ullah, F., P. Jiang, and A. A. Elamer. 2024. "Revolutionizing Green Business: The Power of Academic Directors in Accelerating eco-Innovation and Sustainable Transformation in China." *Business Strategy and the Environment* 33 (6): 5051–5072. https://doi.org/10.1002/bse.3738
Ullah, F., P. Jiang, A. A. Elamer, and A. Owusu. 2022. "Environmental Performance and Corporate Innovation in China: The Moderating Impact of Firm Ownership." *Technological Forecasting and Social Change* 184:121990. https://doi.org/10.1016/j.techfore.2022.121990
Ullah, F., A. Owusu, and A. A. Elamer. 2024. "New Blood Brings Change: Exploring the Link between Rookie Independent Directors and Corporate Cash Holdings." *Long Range Planning* 57 (4): 102451. https://doi.org/10.1016/j.lrp.2024.102451
Useem, M. 1979. "The Social Organization of the American Business Elite and Participation of Corporation Directors in the Governance of American Institutions." *American Sociological Review* 44:: 553–572. https://doi.org/10.2307/2094587
Venturelli, V., A. Pedrazzolio, D. Pennetta, and G. De Novellis. 2024. "Assessing the Influence of ESG Washing on Bank Reputational Exposure: A Cross-Country Analysis." *Business Ethics, the Environment & Responsibility* 34: 1540–1560.
Waelchli, U., and J. Zeller. 2013. "Old Captains at the Helm: Chairman age and Firm Performance." *Journal of Banking & Finance* 37 (5): 1612–1628. https://doi.org/10.1016/j.jbankfin.2012.12.012
Wan, J. 2018. "Non-performing Loans and Housing Prices in China." *International Review of Economics & Finance* 57:26–42. https://doi.org/10.1016/j.iref.2018.02.011
Wang, A. 2020. "Professors on Boards and Corporate Innovation in China." *Applied Economics* 52 (41): 4474–4498. https://doi.org/10.1080/00036846.2020.1735623
Wang, G., K. DeGhetto, B. P. Ellen, and B. T. Lamont. 2019. "Board Antecedents of CEO Duality and the Moderating Role of Country-Level Managerial Discretion: A Meta-Analytic Investigation." *Journal of Management Studies* 56 (1): 172–202. https://doi.org/10.1111/joms.12408
Wang, Y., J. K. Ashton, and A. Jaafar. 2023. "Financial Statement Fraud, Recidivism and Punishment." *Emerging Markets Review* 56:101033. https://doi.org/10.1016/j.ememar.2023.101033
Wang, Y., X. Chen, and Y. Zhang. 2025. "Do Alumni Relationships between Executive Directors and Auditors Matter for Financial Reporting Quality?" *Accounting Forum* 49 (2): 395–423. https://doi.org/10.1080/01559982.2023.2286561
Wang, Y., M. Yu, and S. Gao. 2022. "Gender Diversity and Financial Statement Fraud." *Journal of Accounting and Public Policy* 41 (2): 106903. https://doi.org/10.1016/j.jaccpubpol.2021.106903
Westphal, J. D. 1999. "Collaboration in the Boardroom." *Academy of Management Journal* 42 (1): 7–24. https://doi.org/10.2307/256871
White, J. T., T. Woidtke, H. A. Black, and R. L. Schweitzer. 2014. "Appointments of Academic Directors." *Journal of Corporate Finance* 28:135–151. https://doi.org/10.1016/j.jcorpfin.2013.12.007
Windmeijer, F. 2005. "A Finite Sample Correction for the Variance of Linear Efficient two-Step GMM Estimators." *Journal of Econometrics* 126 (1): 25–51. https://doi.org/10.1016/j.jeconom.2004.02.005
Wintoki, M. B., J. S. Linck, and J. M. Netter. 2012. "Endogeneity and the Dynamics of Internal Corporate Governance." *Journal of Financial Economics* 105 (3): 581–606. https://doi.org/10.1016/j.jfineco.2012.03.005
Wong, T. J. 2016. "Corporate Governance Research on Listed Firms in China: Institutions, Governance and Accountability." *Foundations and Trends® in Accounting* 9 (4): 259–326. https://doi.org/10.1561/1400000039
Xiang, R., and W. Zhu. 2020. "Academic Independent Directors and Corporate Fraud: Evidence from China." *Asia-Pacific Journal of Accounting & Economics* 30 (2): 285–303. https://doi.org/10.1080/16081625.2020.1848594
Ye, K., R. Zhang, and Z. Rezaee. 2010. "Does top Executive Gender Diversity Affect Earnings Quality? A Large Sample Analysis of Chinese Listed Firms." *Advances in Accounting* 26 (1): 47–54. https://doi.org/10.1016/j.adiac.2010.02.008
Young, G. J., Y. Stedham, and R. I. Beekun. 2000. "Boards of Directors and the Adoption of a CEO Performance Evaluation Process: Agency — and Institutional — Theory Perspectives." *Journal of Management Studies* 37 (2): 277–296. https://doi.org/10.1111/1467-6486.00181
Yu, L., D. Wang, and Q. Wang. 2018. "The Effect of Independent Director Reputation Incentives on Corporate Social Responsibility: Evidence from China." *Sustainability* 10 (9): 3302. https://doi.org/10.3390/su10093302
Zhang, D., J. Cai, D. G. Dickinson, and A. M. Kutan. 2016. "Non-performing Loans, Moral Hazard and Regulation of the Chinese Commercial Banking System." *Journal of Banking & Finance* 63:48–60. https://doi.org/10.1016/j.jbankfin.2015.11.010
Zhou, F., Y. Fan, Y. An, and L. Zhong. 2017. "Independent Directors, Non-controlling Directors, and Executive pay-for-Performance Sensitivity: Evidence from Chinese Non-state Owned Enterprises." *Pacific-Basin Finance Journal* 43:55–71. https://doi.org/10.1016/j.pacfin.2017.02.003

Appendix

Table A1. Correlation matrix

	NPL	*Professor*	*Bank size*	*Leverage*	*ROA*	*Loans to Deposits*	*Deposits to Assets*	*Bank age*	*Top ownership*	*Board size*	*Commission number*	*Director meetings*	*Punishment dummy*
NPL	1												
Professor	−0.104***	1											
Bank size	−0.238***	0.531***	1										
Leverage	−0.036	0.150***	0.288***	1									
ROA	−0.390***	−0.040*	−0.090***	−0.158***	1								
Loans to Deposits	0.153***	0.131***	0.201***	−0.282***	−0.096***	1							
Deposits to Assets	0.182***	−0.230***	−0.408***	0.016	0.236***	−0.156***	1						
Bank age	−0.127***	0.199***	0.522***	0.179***	−0.129***	0.158***	−0.223***	1					
Top ownership	−0.182***	0.118***	0.325***	0.064***	−0.268***	0.003	−0.323***	0.224***	1				
Board size	−0.148***	0.285***	0.459***	0.185***	0.159***	0.101***	−0.076***	0.254***	−0.218***	1			
Committee	0.078***	0.128***	0.172***	−0.070***	−0.081***	0.144***	−0.069***	0.232***	−0.153***	0.147***	1		
Meetings	−0.037	0.177***	0.380***	0.077***	−0.132***	0.079***	−0.186***	0.263***	0.081***	0.177***	0.187***	1	
Punishment	0.054**	0.041*	−0.031	0.012	−0.098***	0.018	0.054**	0.059**	−0.042*	−0.025	0.025	0.095***	1

Note. This table shows the correlation between each variable used in the study. ***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$.