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Artificial Intelligence in China's Banking Sector: Promises, Perils, and Regulation

Law Working Paper N° 903/2026
February 2026

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National University of Singapore and ECGI

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Abstract

Artificial Intelligence (AI) is rapidly transforming the banking sector in China. While it has spurred financial innovation, enhanced operational efficiency, and reduced transaction costs to some extent, it has also introduced new risks and complex regulatory challenges. Drawing on first-hand interviews with regulators and practitioners, this article examines the role of regulation and underscores the importance of regulatory tools, especially RegTech and SupTech, in strengthening risk management for AI-enabled banking. Given the high uncertainty and new risks posed by AI, this article argues that regulators should adopt a riskbased and adaptive framework for AI in banking. Such an approach can begin with high-level principles or codes issued as soft law, translate these into practical methods and toolkits through industry pilot programs, handbooks and guidelines, and ultimately evolve into hard law with legal effect (such as Rules or Regulations on AI Risk Management). To balance financial stability with innovation in a rapidly evolving banking sector, the regulatory framework should be technology-neutral, proportionate to use-case risk, embedded within existing risk regimes, and refined through close consultation with financial institutions and evidence from practice.

Keywords: Artificial Intelligence, Banking, China, Risk, Regulation

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Lin Lin*

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I. Introduction

The Fourth Industrial Revolution, driven by rapid advances in computing power, data storage, and communication technologies, is changing human society from the industrial age into the digital era.[1] Artificial Intelligence (AI), the core general-purpose technology of the Fourth Industrial Revolution, is fuelling a new wave of digital innovation across industries. AI's core strengths lie in automating high-cost operations, uncovering and generating novel forms of information, and enhancing the accuracy of predictive analysis.[2] These capabilities are exerting a profound impact on traditional sectors such as banking. While AI is increasingly integrated into essential financial functions, including banking services, investment advisory, and risk management, it also presents new challenges for governance and regulation.

Amidst the explosive growth of AI in China in recent years, Chinese regulators and financial market participants, particularly banks, have proactively sought to integrate AI into their operations. Marked by landmark policies, specifically the "*Action Plan on Intensifying Financial Support for Technology-Based Enterprises*" and the "*Action Plan for Promoting High-Quality Development of Digital Finance*" spearheaded by the People's Bank of China (PBOC),[3] China's approach to AI in finance is profoundly shaped by two fundamental dimensions.

[1] United Nations Conference on Trade and Development (2025), p. 19.
[2] Agrawal et al. (2022).
[3] Financial News (2024); PBOC et al. (2024).

First, China's rich data and advancing financial technology (FinTech) infrastructure establish robust data foundations for AI development. Data, as the core production element of AI technology, directly determines the scope and efficacy of algorithmic models. Bolstered by its extensive population and a series of strategic national policies,[4] China possesses significant data advantages for developing and training AI systems. In this regard, the "*Financial Technology Development Plan (2022-2025)*" issued by the PBOC[5] sets ambitious goals for the full release of data element value and high-quality digital transformation, aiming to achieve a "digital, intelligent, green, and fair" financial service capability by 2025.

Parallel to this, China's FinTech sector has demonstrated dynamic growth. By 2021, the core AI industry had reached a scale exceeding 180 billion RMB, catalyzing related industries valued at over 740 billion RMB.[6] In the first half of 2025, generative AI technologies in China witnessed substantial advancements, reflected in the rapid increase in product development and the diversification of application scenarios.[7]

At the institutional level, persistent increases in IT investment by financial institutions underscore the strength of this technological transformation, rising from 359.77 billion RMB in 2023 to 394.96 billion RMB in 2024.[8] These technological advancements have equipped financial institutions, particularly banks, with the capability to deploy large-scale AI applications more effectively.[9] The burgeoning market for financial large models[10] in China is indicative of this trend, with the market size expected to surge from 1.593 billion RMB in 2023 to 13.179 billion RMB by 2028.[11]

Second, from a regulatory perspective, China, as the world's second-largest economy, and characterized by a large population and regional disparities, has adopted an innovation-friendly strategy and an adaptive regulatory framework for FinTech as part of its drive towards inclusive and sustainable finance of the nation.[12] While the banking sector plays an essential role in China's financial system, its current regulatory strategy towards AI focuses on encouraging financial innovation alongside risk management, enabling the rapid deployment and continuous iteration of AI within the industry. This "develop first" approach stands in sharp contrast to the European Union's (EU) "regulation first" model and the more laissez-faire innovation paradigm in the United States (US).[13]

While China's rapid deployment of AI in financial markets has driven significant advancements, it has also introduced substantial risks that require careful regulatory responses. At the technical level, issues such as computational errors and the "black box" opacity of

[4] Xinhua News Agency (2025 a); Cyberspace Administration of China et al. (2024).
[5] PBOC (2022).
[6] Lu et al. (2023).
[7] China Internet Network Information Center (2025).
[8] iResearch and Ai (2025).
[9] Regarding the overall development and policy orientation of AI in China, see Zhang (2024); Zhang (2025).
[10] A large model or large-scale model refers to one trained on substantial data with a complex computational architecture, capable of handling complex tasks and possessing generalization ability, typically with no fewer than 100 million parameters. In contrast, small models are lighter, task-specific, and easier to deploy. See China Academy of Information and Communications Technology (2024), p. 32.
[11] Frost & Sullivan (2024).
[12] PBOC et al. (2024).
[13] Poncibò and Ebers (2025).

algorithmic models present persistent challenges. At the market level, the widespread use of similar algorithms can increase risk concentration and pro-cyclicality, potentially resulting in model resonance risks.[14]

A central challenge for both regulators and market participants is effectively managing these risks while fostering technological innovation. Although a growing body of literature and numerous policy reports have examined AI in finance,[15] a distinct research gap remains. There is a scarcity of academic analysis that systematically examines the latest laws and practices in China's banking sector from a legal perspective.

This study employs a mixed-methods design to examine how AI's promises and perils are unfolding in China's banking system and to assess the role of regulation going forward. The empirical dataset has two components. First, semi-structured interviews with key market participants, including regulators, bankers, legal counsels, and entrepreneurs [16] provide qualitative insights into governance practices, model risk management, compliance, and innovation dynamics. Where interviews are not feasible, public statements and published panel transcripts serve as substitutes.[17]

Second, a wide-ranging quantitative corpus is assembled from data and reports issued by regulators and consulting firms, including information papers, enforcement statistics, industry reports, and market analyses.[18] These sources support a current set of case studies on AI in banking. Collectively, this approach provides evidence-based insights into regulatory design and implementation for AI in banking in the future.

This article seeks to fill the literature gap by addressing three key questions: *(1) How is AI being integrated into the banking sector? (2) What are the major risks of AI banking? (3)What roles should regulators play in addressing risks associated with AI adoption in the banking sector?*

[14] For a further discussion on AI risk, see Daníelsson et al. (2022); Jones (2024).
[15] For a broad discussion on AI in finance, innovation, and risk, see, e.g., relevant policy and industry reports: BoE and FCA (2025); Financial Stability Board (2024); Hong Kong Institute for Monetary and Financial Research (2025); MAS (2024); MindForge Consortium (2024); Financial Stability Board (2020); For academic literature, see: Leitner et al. (2024); Crisanto et al. (2024); Daníelsson et al. (2022); Azzutti et al. (2021); Truby et al. (2020).
[16] Interviewees consist of the following groups: (1) regulators: officials responsible for AI governance and innovation of Monetary Authority of Singapore; (2) senior managers and practitioners from Chinese state-owned companies (Singapore operations): China Construction Bank (CCB), Bank of China (BOC), China Telecommunications Corporation, Sinopec Lubricant, MCC Land, China Construction and CRCC; (3) representatives from investment banks and financial conglomerates (Singapore operations): China International Capital Corporation (CICC); and (4) founders and technical leads from various Fintech companies in Singapore, including Dtcpay. Anonymity required.
[17] See, e.g., official speeches and policy interpretations: Xiao (2025) (Speech by NFRA Vice Minister on "Five Key Issues" of AI in Finance); Financial News (2024) (PBOC officials on "Five Major Areas"); Xinhua News Agency (2025 b) (State Council policy briefing). For transcripts of major industry panels and forums: Brokerage China and Tan (2025) (2025 China Securities Industry Digital Practice Summit Forum); Luohan Academy Views and Huang (2025) (Panel discussion); Peking University National School of Development and Huang (2025); Tsinghua Wudaokou and Xiao (2025).
[18] Aldasoro et al. (2024); Association of Banks in Singapore (2025); BoE and FCA (2025); BOCOM International (2023; 2024); Bromberg et al. (2017); Caixin (2024); China Academy of Information and Communications Technology (2024); China Internet Network Information Center (2025); Crisanto et al. (2024); Deloitte China (2025); Financial Stability Board (2020; 2024); Frost & Sullivan (2024); Han Kun Law Offices (2025); Hong Kong Institute for Monetary and Financial Research (2025); KPMG (2020; 2024; 2025); Leitner et al. (2024); MindForge Consortium (2024; 2025); MAS (2024; 2025); Personal Data Protection Commission (2020); PwC (2025); United Nations Conference on Trade and Development (2025).

To ground these inquiries in empirical reality, this article situates its analysis within the broader discourse of FinTech governance, using China's banking industry as a primary case study. By examining the concrete pathways of AI integration and the evolving regulatory landscape in China, this study aims to identify transferable regulatory approaches for AI in banking. Focusing on China in this field is both important and timely for several reasons: China is widely recognized as a global leader in the scale of deployment, depth of application, and user acceptance of digital financial services. China's unique market structure, which is characterized by the high penetration of mobile payments and a tech-savvy consumer base, provides a distinctive environment for the rapid expansion of AI applications. Drawing on first-hand interviews with regulators and practitioners,[19] this study offers valuable insights into the future development of AI in the banking sector.

The article is structured as follows: Section II discusses the factors driving the rapid adoption of AI technology by banks in China and clarifies the governance pathway that has emerged, shaped by the country's distinctive market structure and regulatory approach. This section demonstrates that China's strong policy emphasis on inclusive finance, coupled with the accelerated adoption of digital and AI technologies,[20] offers new avenues for overcoming the Financial Inclusion Trilemma of scale, risk, and profitability in inclusive finance.[21]

Section III details the major players and specific application scenarios of AI within the banking industry. Section IV examines the major risks associated with AI applications, including data-related risks, model-related risks, and systemic risks. Section V examines the role of regulation and underscores the importance of Regulatory Technology (RegTech) and Supervisory Technology (SupTech) in strengthening risk management for AI-enabled banking.

Finally, given the high uncertainty and new risks posed by AI, this article argues that regulators should adopt a risk-based and adaptive framework for AI in banking.

II. The Rise of AI in Banking

In this article, AI is defined as "a set of technologies that seek to simulate human traits such as knowledge, reasoning, problem solving, perception, learning and planning."[22] It operates as "a machine-based system that for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments."[23]

This definition highlights a key characteristic of modern AI: its core concept is largely simulative, aiming to "simulate human traits". This simulative nature can be seen in the evolution of its technical classifications, ranging from simple "if-then" rule-based expert

[19] The author thanks the regulators and practitioners mentioned in *supra* note 16 for providing insights to this article.
[20] Regarding the policy development of inclusive finance in China and the support from digital finance, see Caixin (2024).
[21] Zetzsche et al. (2023).
[22] Personal Data Protection Commission (2020).
[23] OECD.AI (undated).

systems, to natural language processing (NLP), and machine learning.[24] The latter generates pattern recognition and inference from data training rather than through explicit human instructions.[25] With the emergence of large language models (LLMs), this simulative ambition appears to be evolving along a path from "AI agents", which are seen as the "next frontier" with planning capabilities and tool-use abilities, to "artificial general intelligence" (AGI), which is regarded as the "ultimate goal".[26] This developmental path functionally seems to imply a progressive replacement of human capabilities, culminating in AGI systems that have the potential to "perform all cognitive tasks that humans can perform".[27]

However, this simulation of "intelligence" currently appears to have its limitations. In fact, according to Agrawal et al., AI is often simplified to its core function: a "prediction technology" that uses available information to generate the information needed.[28] This perspective suggests that AI's disruptive potential stems from its nature as an advanced statistical technique, rather than an ability to truly "think". This instrumental perspective also reveals its current limitations. For example, generative AI models have recently been described as "stochastic parrots". They are adept at combining text based on a "stochastic process" and "probabilistic information", generating language that is difficult to distinguish from human interaction, yet they do "not fundamentally understand the underlying logic" of the content they produce.[29]

Nevertheless, these predictive features of AI appear to correspond well with the fundamental demands of the financial system, particularly its ability to process vast amounts of data. Although lacking human-like reasoning, it is reasonable to infer that AI possesses the potential to address long-standing inefficiencies within the sector. In the context of China, this potential is arguably being explored most actively, as the sheer scale of the market provides a distinctive environment for testing these probabilistic tools.

The integration of AI into China's financial sector, especially the intelligent transformation of banking, is propelled by internal institutional needs, sustained capital investment, and supportive policy initiatives.[30]

First, the intrinsic demand for AI in China's banking sector arises from the distinctive structure of its financial system, which is dominated by state-owned banks and encompasses a complex shadow banking sector.[31] By the end of the second quarter of 2025, the total domestic and foreign currency assets of China's banking institutions reached 467.3 trillion RMB.[32] As important financial intermediaries, banks use economies of scale and specialized expertise to reduce transaction costs in capital allocation, and rely on advanced information processing to mitigate information asymmetry, reducing adverse selection and moral hazard.[33] Despite its

[24] Buckley et al. (2021).
[25] *Ibid*.
[26] Aldasoro et al. (2024).
[27] Aldasoro et al. (2024).
[28] Agrawal et al. (2022).
[29] Leitner et al. (2024).
[30] iResearch and Ai (2022).
[31] He and Wei (2023), p. 45.
[32] NFRA (2024 a).
[33] Boyd and Smith (1992); Benston and Smith (1976); Levine (1997).

scale and essential role in the economy and financial system, China's banking industry has long faced criticism for operational inefficiency and low service quality, particularly in areas such as customer service and lending processes.[34]

Therefore, there is a strong demand for financial innovation to enhance efficiency and reduce costs in the banking sector. Financial technologies, especially those leveraging AI, have delivered new solutions to enhance the efficiency of deposit and lending operations, as exemplified by AI-powered lending platforms. These advancements further promote inclusive finance and improve service quality, as demonstrated by the widespread deployment of intelligent customer service systems across Chinese banks.

Second, against this backdrop, China has issued many policy documents to promote the development of AI.[35] For example, the State Council, through the *"Opinions on Deepening the Implementation of the 'Artificial Intelligence Plus' Initiative",* calls for the comprehensive implementation of the "*Artificial Intelligence Plus*" initiative and the strengthening of extensive and in-depth integration of AI across various fields.[36] In the financial services sector, the China Central Financial Work Conference underscored the importance of advancing five key areas, including FinTech.[37] In alignment with these priorities, the National Financial Regulatory Administration (NFRA) announced in 2024 its commitment to promoting the digital transformation of the banking and insurance sectors.[38]

This high-level policy agenda has been translated by leading financial institutions into concrete action plans. For instance, the Bank of China unveiled its *"Action Plan to Support the Development of the AI Industry Chain*" in 2025, pledging at least 1 trillion RMB in comprehensive financial support over the next five years to stakeholders throughout the AI industry chain.[39]

With strong policy support and increasing capital supply, China's banking sector has shifted from cautious observation to active, large-scale investment in AI. This strategic shift is evident across the sector, from state-owned and private banks to major city and rural commercial banks, with AI applications permeating front, middle, and back-office operations. A significant driver of this momentum is the rapid adoption of large-scale AI models.[40]

Notably, with the rise of mobile payments over the past decade,[41] China has established the technological, socio-cultural, and institutional foundations necessary for the deep integration of AI in banking. In particular, the technical architecture of platforms such as DeepSeek[42] is

[34] Luohan Academy Views and Huang (2025).
[35] Kamalnath and Lin (2025), Appendix 2.
[36] Xinhua News Agency (2025 b).
[37] He (2025).
[38] NFRA (2024 b).
[39] Bank of China (2025).
[40] China Fund News and Tian (2025).
[41] Huang et al. (2021)
[42] DeepSeek is a Chinese artificial intelligence company focused on the research and development of foundational large models, legally registered as Hangzhou DeepSeek Artificial Intelligence Basic Technology Research Co., Ltd. It achieved a technological breakthrough and explosive growth in 2025, driven by its innovative Mixture-of-Experts (MoE) model architecture, which significantly enhances model

especially well-suited to the unique requirements of the financial sector. Its core capabilities, including multimodal reasoning and lightweight deployment, align with the industry's data-intensive nature, stringent compliance and security requirements, and need for real-time responsiveness.[43] Accordingly, reports indicate that more than 33 banks in China have begun implementing DeepSeek as of June 2025.[44] The ongoing progression towards AI-driven banking is set to define the industry's trajectory over the coming decade.[45]

III. The Integration of AI in Banking

The integration of AI in the banking ecosystem involves various stakeholders, including banks, consumers, technology companies, regulatory authorities, and other financial participants. The following section examines the major players and key applications of AI in China's banking sector.

A. Major Players

1. Banks

China's banking system operates under a multi-tier regulatory framework. This framework is composed of the PBOC as the central bank, the NFRA as the primary regulatory body, and the China Banking Association as the industry's self-regulatory organization.

Within this framework, various types of banks fulfill distinct roles, together forming a layered financial ecosystem. At the core are policy banks, which support national strategies, and the six major state-owned commercial banks, which operate under direct state control. These are followed by nationwide joint-stock commercial banks, characterized by diversified ownership structures that include both state and private capital. City commercial banks primarily serve local economies within specific municipalities, while rural cooperative financial institutions cater to counties and rural areas. The system also includes foreign banks providing international services and privately-owned banks controlled by private capital.[46]

Currently, state-owned and nationwide joint-stock commercial banks are at the forefront of adopting large-scale AI technologies, with nearly all such institutions actively investing in the development and private deployment of proprietary AI models.[47] In contrast, city and rural commercial banks are gradually moving from cautious observation to piloting selected AI applications, with leading city commercial and private banks making the most significant progress.[48]

a) State-Owned Commercial Banks

performance and scales parameters while effectively reducing training and inference costs. For an introduction to related models, see GitHub (undated).
[43] China Fund News and Tian (2025).
[44] China Securities Journal (2025).
[45] *Ibid*.
[46] For details, see NFRA (2024 c).
[47] Dune Community (2025).
[48] *Ibid*.

The Industrial and Commercial Bank of China (ICBC) exemplifies the state-owned banking sector's AI initiatives. As the largest commercial bank in China, ICBC has completed the private deployment of DeepSeek's latest open-source large models, integrating them into its proprietary "ICBC Zhiyong" AI platform. Leveraging this infrastructure, the bank has launched a suite of specialized applications, such as "ChatDealing" (an intelligent dialogue interface for transactional processes), "Gong Xiaohui" (a customer-facing AI assistant), and "Gong Xiaoshen" (a credit risk control assistant supporting the credit approval workflow). "Gong Xiaoshen" consolidates capabilities such as credit policy advisory, report generation, risk assessment, data analysis, and recommendation of credit decisions.[49]

b) Joint-Stock and City Commercial Banks

Other joint-stock and regional banks have also prioritized the development of AI large models, making significant progress in various application areas aligned with their respective strengths. Commercial banks such as China Merchants Bank, Ping An Bank, and China Everbright Bank have deployed AI-driven solutions across retail banking, risk management, and operational processes.[50]

Notably, China Zheshang Bank, in collaboration with Ant Group founder Jack Ma, is pioneering the establishment of China's first AI-driven bank. This initiative focuses on two core areas: an AI-based risk management system designed to automate and enhance monitoring functions; and digitally enabled, AI-driven wealth management services. The pilot projects are currently underway in Shanghai, with plans to utilize high-performance computing resources to deliver scalable and personalized wealth management solutions.[51]

c)Privately-Owned Banks Backed by Internet Platforms

China's privately-owned banks, particularly those backed by major technology companies, are also advancing AI integration in banking by leveraging their strong technological capabilities. For instance, MYbank (affiliated with Alibaba) has introduced the "AI CFO" concept, [52] while WeBank (associated with Tencent) has widely implemented AI across its operations. WeBank places special emphasis on developing an independent and controllable technology ecosystem, with the strategic goal of reducing reliance on external vendors.[53]

2.Main Service Providers

[49] Cailian Press and Peng (2025).
[50] Banking Technology Research Society and Mu (2025).
[51] Ruicaiwang (2025).
[52] China Fortune (2025).
[53] Financial Electronics (2025).

Beyond the banks themselves, China's "AI+ banking" ecosystem[54] is characterized by an interconnected industry landscape. A range of firms specializing in distinct niches collaborate to drive the sector's intelligent transformation through integration and partnerships.[55]

The ecosystem primarily comprises the following categories of service providers:[56] first, technology service providers offering top-level design and comprehensive solutions, mainly China's tech giants such as Tencent, Ant Group, and Baidu; second, FinTech IT service providers focused on technical implementation and system integration, including iSoftStone, Sunline, and CEC Jinxin; third, cloud application providers delivering essential computing power and platform services, represented by Alibaba Cloud, Baidu Intelligent Cloud, and Tencent Cloud; fourth, intelligent technology companies specializing in algorithm and model innovation, such as BaiRong Yunchuang, Fourth Paradigm, and iFlytek; fifth, data security service providers ensuring the secure operation of the financial system, including Insight Technology, Fushu, and Ant Morse; sixth, automation technology companies that enhance operational efficiency, such as Kingwise and DataGrand.

3.Credit-Tech Platforms

Credit-tech platforms are also significant players in this AI+ banking ecosystem. These platforms originate from micro-lending firms, P2P platforms, or spin-offs of large internet finance enterprises. Their primary function is to facilitate loans. Driven by tightening financial regulations in China, they are transitioning from capital-intensive operations to technology-driven, compliance-focused business models.[57]

First, credit-tech platforms are building AI-powered, end-to-end risk control systems that integrate customer acquisition, post-loan management, and other key processes to increase customer flow.[58] Second, leading platforms such as Qifu Technology, Lexin, and Xinye Technology are evolving into comprehensive digital service providers for banks, pursuing a "to-bank" secondary growth strategy.[59]

For example, Qifu launched Deepbank, a self-developed financial intelligence platform focused on core "AI in banking" products.[60] The platform delivers a comprehensive decision-making system tailored to core banking scenarios, covering the entire credit process: credit approval, evaluation, compliance, data analysis, strategy formulation, and execution. The model utilizes big data processing and automation to enable intelligent, automated decision-

[54] China's banks are adopting an "AI+" strategy with three main aspects: first, a model foundation that provides basic intelligent capabilities; second, supporting mechanisms that emphasize security and risk management; and third, innovative applications that combine different business scenarios. See 21st Century Business Herald and Li (2024).
[55] BOCOM International (2024), p. 31.
[56] *Ibid*.
[57] To address the growing risks in partnerships between banks and Credit-tech platforms for online lending, China's NFRA has issued the "Notice on Strengthening the Management of Commercial Banks' Internet Co-lending Business and Improving the Quality and Efficiency of Financial Services." These new rules force commercial banks to take full responsibility for the loans they facilitate, requiring them to independently assess risk and ensure their Credit-tech partners operate under strict, compliance-focused models.
[58] Consumer Finance Economics (2025).
[59] *Ibid*.
[60] Qifu Technology (2025).

making.[61] In particular, Qifu's Intelligent Credit Engine (ICE) leverages big data analytics and cloud computing to match borrowers with financial institutions.[62] AI further enhances loan facilitation through systems such as the Argus Intelligent Risk Control Engine and the CloudBank workflow platform, offering end-to-end automation in marketing, risk assessment, and post-lending services.[63]

The impact of these transformations was evident in 2024, as all seven listed credit-FinTech platforms, namely Qifu Technology, Lexin, Xinye Technology, Xiaoying Technology, Yiren Zhike, Jiayin Technology, and Weixin Jinke, achieved positive revenue growth. Many of these platforms also recorded growth in net profits.[64] Collectively, they facilitated over one trillion RMB in new loans in 2024.[65]

In addition, China's central and local governments play a pivotal role in the "AI in banking" ecosystem. They provide policy guidance, promote platform integration, and foster collaboration between governments and banks. For example, the Chengdu municipal government spearheaded the "Rong e Investment" AI investment platform, which efficiently matches bank loan products with enterprise financing needs and integrates "financing + policy + resource" services.[66] Similarly, the Guangzhou municipal government partnered with Qifu Technology to sign an "AI plus Financial Strategic Cooperation Agreement" with Guangdong Huaxing Bank.[67] The agreement focuses on marketing and customer acquisition, risk control and approval, and decision analytics.[68]

B. Major Applications

1. AI Chatbots & Virtual Assistants

The banking sector requires rapid response times and serves a diverse clientele. It also operates under stringent compliance and confidentiality standards, while prioritizing high service quality. Within this context, AI assistants have become pivotal in enhancing operational efficiency and customer satisfaction, marking a significant direction for industry innovation.[69]

Before the widespread adoption of large AI models such as DeepSeek, Chinese banks primarily relied on Robotic Process Automation (RPA) for intelligent customer service. While RPA robots contributed to cost reduction, they often fell short in terms of customer satisfaction. The advent of large-scale AI models has allowed banks to integrate these advanced systems with existing RPA frameworks. By integrating RPA with advanced AI models like DeepSeek, banks

[61] *Ibid*.
[62] FinTech Application Research Institute (2025).
[63] BOCOM International (2023), p. 60.
[64] Caijing New Media and Wang (2025).
[65] *Ibid*.
[66] Chengdu Daily (2025).
[67] Qifu Technology (2025).
[68] *Ibid*.
[69] Everbright Bank Financial Technology and China Everbright Bank (2023).

have progressed from basic automation to intelligent decision-making. This shift moves customer service closer to "unmanned service", greatly enhancing the customer experience.[70]

By late 2024, the Bank of Beijing, in collaboration with Huawei, was among the first to deploy DeepSeek's large models in the financial sector, piloting them in customer service and other critical business scenarios.[71] By July 2025, the bank filed a patent application for a "retrieval-augmented large model intelligent customer service method and system," which leverages neural networks, natural language processing, and multi-objective optimization algorithms. Utilizing intent recognition, user profile analysis, and preference weighting, the system can recommend personalized financial product portfolios tailored to users' financial situations, investment objectives, and risk preferences.[72]

2. Retail Lending

AI is increasingly used in China's retail banking through streamlined "easy loan" products. These products feature simplified processes, minimal collateral requirements, and rapid approvals. Banks utilize AI systems to analyze extensive customer data and generate pre-approved credit "whitelists," allowing customers to access credit instantly without lengthy manual reviews. This significantly reduces processing times and enhances the overall customer experience.[73]

However, these efficiency gains primarily result from banks' longstanding investments in big data analytics and risk control mechanisms. While the application of LLMs in highly standardized lending processes is still nascent, their potential is more pronounced in corporate lending.[74] This is because corporate lending involves processing unstructured and complex data. LLMs can analyze intricate credit-review protocols, extract critical information from corporate documents, identify anomalies in financial reports, and assist officers in drafting detailed credit analyses. By streamlining complex corporate lending processes, LLMs may improve both the accuracy and speed of lending decisions.[75]

3. Corporate Banking

Instead of relying solely on large models, Chinese banks have begun integrating both large and small models[76] to build intelligent solutions.[77] This approach extends AI's applicability beyond retail banking to corporate banking and financial markets.

For example, China Merchants Bank's "Zhao Xiaocai" AI assistant accurately identifies customer intent and assists with complex corporate finance tasks, while "Zhiben GPT"

[70] Modern Commercial Bank Magazine and Ma (2025).
[71] Capital Construction News (2025).
[72] Banking Technology Research Society and Ou (2025).
[73] National Business Daily (2024).
[74] Jiemian News and An (2025).
[75] *Ibid*.
[76] For the relevant definition, see supra note 10.
[77] Tsinghua Wudaokou and Xiao (2025).

optimizes capital management product pricing.[78] Postal Savings Bank of China demonstrates innovation with its "You Xiaozhu" money market trading robot, which uses a small model for high-frequency price inquiries and a large model for intent recognition, enabling efficient interaction with external institutions. Its trader assistant robot combines a large model for semantic understanding with a small model for data integration, offering one-stop pre-trade information and decision support for internal traders, significantly reducing preparation time.[79]

4. Corporate Governance

The integration of AI has had a significant impact on traditional corporate governance and organizational structures in banks.

First, AI has elevated the role of the Chief Technology Officer (CTO), expanding their responsibilities to a more strategic function. China's regulatory guidance on digital transformation requires banks to incorporate digital (including AI) initiatives into overall strategy, often mandating the establishment of dedicated digital strategy committees.[80] Against this backdrop, the CTO has become the central driver of technology strategy in Chinese banks, shaping the bank's AI roadmap and ensuring that technology deployment aligns with business objectives.[81]

Second, as a key figure in corporate governance, the Chief Financial Officer (CFO) can leverage AI technologies to enhance both the efficiency and quality of decision-making.[82] Interestingly, MYbank[83] has proposed the "AI Bank" concept, positioning itself as the CFO for SMEs using AI technology.[84] It aims to upgrade its service model in three areas:[85] (1) transitioning from a traditional financial product provider to an "intelligent financial steward," offering comprehensive decision support, including risk warnings and funds management; (2) moving beyond financial management to serve as an "operational decision advisor," leveraging big data analytics to support business strategies like site selection and marketing; (3) integrating legal, credit, and supply chain services to provide holistic financial solutions tailored to different stages of enterprise growth. Through this proposed model, financial services that were once exclusive to a select group of high-end clients may become accessible to a wide range of SMEs.[86]

Third, as AI becomes more integrated into banking operations, the responsibilities of independent directors in corporate governance have also expanded to include greater

[78] 21st Century Business Herald and Li (2024).
[79] *Ibid*.
[80] General Office of the China Banking and Insurance Regulatory Commission (2022).
[81] For example, the CTO of ICBC, Mr. Lü Zhongtao led the development of an enterprise-level, trillion-parameter financial model system, encompassing computing power, algorithms, data, tools, and security, and building a new "AI in banking" ecosystem. See 21st Century Business Herald and Zhang (2024).
[82] PwC (2025).
[83] Established on June 25, 2015, MYbank is one of China's first privately-owned banks, initiated by Ant Group with the approval of the CBIRC. The bank's core business involves providing financial services to small and micro-entities, which include enterprises, individual businesses, and agricultural operators. See MYbank (undated).
[84] Zhongke Finance et al. (2025).
[85] China Fortune (2025).
[86] *Ibid*.

involvement in strategy, risk oversight, and compliance. Many Chinese banks now prioritize candidates with FinTech or data expertise for independent director positions to strengthen their digital transformation governance.[87]

C. Summary

A review of these applications reveals a multifaceted landscape of AI adoption. While standardized and high-volume scenarios such as retail lending prioritize speed and automation, applications in complex decision-making domains like corporate governance tend to emphasize human-AI collaboration. In these contexts, the technology primarily serves to augment human expertise by acting as an intelligent assistant rather than fully replacing human decision-makers.

This observable difference in application aligns with the current industry consensus that existing artificial intelligence technologies fall under the category of "weak AI" or "narrow AI." These are algorithms designed to simulate human behavior for specific tasks, which differs from "strong AI" or "artificial general intelligence" that aims to match or even surpass human intelligence.[88] At present, AI applications deployed in China's financial sector remain firmly within the realm of weak AI as they predominantly focus on functional optimization such as risk control, credit assessment, and preliminary marketing.

However, as AI technologies continue to iterate and evolve, the expansion of their functions in socioeconomic activities is hardly unforeseeable. Identifying the corresponding needs of governance systems and formulating strategies suited to them has become one of the key responsibilities of today's policymakers and regulators.

IV. The Promise of AI in Banking?

The widespread adoption of AI applications described in the previous section, ranging from intelligent customer service to automated credit approval, signifies more than just operational upgrades for individual banks. On a macro level, these technological advancements provide a structural opportunity to resolve long-standing inefficiencies in the banking sector. By fundamentally altering the cost structure and risk assessment capabilities of financial institutions, AI offers a novel pathway to address the historic tension between accessibility and sustainability in financial services, widely known as the "Financial Inclusion Trilemma."

Financial inclusion theory emphasizes the primary goal of providing appropriate and effective financial services at affordable costs to all segments of society, guided by the principles of equal opportunity and commercial viability.[89] Commercial banks have long faced challenges in pursuing inclusive financial services: the difficulty of simultaneously achieving scale (broad

[87] For example, Zhu Yuhong, who was appointed as an independent director of Industrial Bank in June 2024, once led the construction of China Construction Bank's new-generation core system. Her professional background directly serves Industrial Bank's digital transformation strategy. See Cailian Press and Liang (2024).
[88] Leitner et al. (2024).
[89] Boyd and Smith (1992); Benston and Smith (1976); Levine (1997).

accessibility), maintaining effective risk management (fair and equitable terms), and ensuring profitability.[90]

This trilemma arises from the fundamental conflict between the significant fixed costs associated with traditional financial services, such as account onboarding, system maintenance, and credit assessment, and the small-scale transactions typical of low-income customers. Microloans and other modest financial activities often fail to generate sufficient revenue to cover these costs.[91] Consequently, banks are forced to either forgo serving the vast long-tail customer base to control losses (which compromises scale), or to recoup costs by charging high, sometimes exploitative fees (which compromises fairness and risk management). This results in a persistent and structurally irreconcilable trilemma.

The 2024 joint report from the Bank of England (BoE) and the Financial Conduct Authority (FCA) (the BoE and FCA report) shows that AI can significantly reduce IT operational and maintenance costs. The report highlights that firms' primary focus for AI implementation is on "operations and IT", which account for 22% of use cases, and that the largest expected benefits over the next three years are improvements in "operational efficiency, productivity, and cost base".[92] Such efficiencies could, in turn, enable firms to profitably serve low-margin, long-tail customer segments.

Simultaneously, by unlocking the value of extensive data assets and utilizing AI and knowledge graph technologies for precise customer profiling, financial services have the potential to effectively reach previously underserved groups, such as SMEs, thereby expanding their scale.[93] Furthermore, big data-driven risk control technologies can potentially enhance risk management frameworks by enabling banks to implement end-to-end digital processes for risk identification, early warning, and response in online operations. This may helps to mitigate emerging risks, such as credit fraud.[94] By restructuring cost models and innovating risk control mechanisms, digital technologies, including AI, may enable financial institutions to provide large-scale inclusive financial services while effectively balancing risk management and profitability.[95]

In particular, LLM[96] technology in banking has three primary applications: lending, data analysis, and intelligent marketing. First, in lending, the process is evolving from traditional "manual review" to "intelligent review." AI is being leveraged to automate and enhance decision-making. Second, LLMs address internal data retrieval bottlenecks. They allow business personnel to access information efficiently without requiring technical expertise in database management. Third, in marketing, LLMs facilitate a shift from generic, one-size-fits-

[90] Levitin (2024), p. 113.
[91] *Ibid*., p.116.
[92] BoE and FCA (2025).
[93] Kshetri (2021), p. 1.
[94] Caixin (2024), p. 17.
[95] Ibid., pp. 17-20.
[96] LLMs are a category of foundation models trained on immense amounts of data making them capable of understanding and generating natural language and other types of content to perform a wide range of tasks. See IBM (2023).

all approaches to highly personalized "one customer, one approach" campaigns, enabling banks to tailor their outreach and engagement strategies to individual customers' needs.[97]

In practice, AI has begun to be explored as a novel potential solution to the Financial Inclusion Trilemma in China. As LLMs like DeepSeek continue to advance, their ability to address general-purpose tasks steadily improves, diminishing the need for banks to develop pre-trained models from scratch. This development could enable small and medium-sized banks to overcome limitations in resources, technology, and talent, thereby opening up new opportunities for growth.[98]

In more specialized domains, however, large banks are likely to further consolidate their competitive advantage due to their substantial resources. For instance, large commercial banks, such as ICBC and China Construction Bank (CCC), benefit from extensive product lines and vast repositories of historical asset allocation data. This enables them to train highly specialized asset allocation models, thereby strengthening their industry leadership.[99]

Over the past decade, data shows that China's inclusive finance market has continued to expand, a trend supported by the rapid advancement of big data and AI.[100] Taking micro and small enterprise finance as an example, banks have leveraged financial technology to achieve a transformation from offline to online operations, from single data dimensions to cross-validation, and from broad-based credit products to industry-specific financial solutions.[101] Micro and small loan offerings have also evolved from a collection of separate products into integrated, generative credit product platforms with unified access points.[102]

As recent analyses of China's tech-empowered banking illustrate, the industry has been strengthened in three key aspects: data application, product innovation, and risk management.[103]

In terms of data application, banks are no longer limited to traditional financial metrics. They now widely incorporate alternative data such as operational, transactional, and social data from enterprises.[104] By mining and analyzing this diverse data, banks aim to assess a company's creditworthiness and repayment capacity more comprehensively and accurately. For example, some Chinese banks analyze e-commerce transaction data to understand a company's sales performance and market share, which can provide strong support for credit approvals.[105]

On the product innovation front, banks have launched a variety of tailored financial products to meet the diverse needs of micro and small enterprises.[106] For instance, intellectual property

[97] Xinhua Finance Agency (2025).
[98] Ibid.
[99] *Ibid*.
[100] Wang (2025).
[101] *Ibid*.
[102] *Ibid*.
[103] *Ibid*.
[104] *Ibid*.
[105] *Ibid*.
[106] *Ibid*.

pledge loans create new financing channels to technology-driven businesses, while supply chain financing products help alleviate cash flow challenges for enterprises throughout the value chain. Additionally, an increasing number of Chinese banks are utilizing AI technologies to optimize loan approval processes, enhance efficiency, and deliver more convenient financial services to businesses.[107]

In risk management, banks are continually innovating by introducing big data risk control models and AI technologies for real-time monitoring and early warning of risks.[108] By analyzing both historical and current data, Chinese banks aim to quickly identify potential risk points and take preventative action. For example, machine learning algorithms can be used to predict repayment behavior, potentially enabling banks to proactively identify enterprises at risk of default.[109]

However, the reliance on algorithmic decision-making shifts the nature of banking risks from conventional risks such as credit, market and liquidity risks to more complex technical risks. The very mechanisms that enable AI to enhance inclusion, such as the processing of vast alternative datasets and the use of complex "black box" models, simultaneously introduce new vulnerabilities and greater uncertainties. If the underlying data is flawed, biased, or compromised, the efficiency gains of AI can quickly transform into systemic discrimination or financial instability. Consequently, as the banking sector pivots toward an AI-driven model, it must confront a new set of profound challenges: data integrity issues, model opacity, and systemic risks, which will be examined in the following section.

V.The Risks of AI in Banking

As AI becomes more deeply embedded in banking, it brings a complex mix of technical and operational challenges. To organize these issues, this section draws on empirical study[110] and taxonomies from major international regulators. These frameworks provide a practical baseline and shared vocabulary for diagnosing vulnerabilities, such as data integrity and model opacity, that emerge across banking systems.

Applying these frameworks to China, however, requires careful calibration. The broad risk categories, namely data, model, and systemic risks, remain conceptually sound, but their practical expression is shaped by China's distinctive regulatory environment. Accordingly, the analysis treats global risk categories not as endpoints but as comparative starting points, using them to explore how universal challenges are amplified, reshaped, or reconfigured within the specific political economy of China's financial system.

In its current iteration, the training and application of AI are largely contingent upon two core elements: (1) the vast amounts of structured and unstructured raw data fed into the pre-training

[107] *Ibid*.
[108] *Ibid*.
[109] *Ibid*.
[110] See supra note 18.

phase, and (2) the machine learning models capable of self-training based on this data.[111] Inherent uncertainties at both the data and model levels translate directly into significant operational risks at the deployment stage.[112] These risks may be amplified and propagated throughout the financial system, thereby creating systemic risks.[113]

Notably, the nature of these risks is expected to evolve as AI technology matures from its nascent stage to broader application. The BoE and FCA report indicates this trend of transformation: while the industry's current perception of AI risk is predominantly focused on the data level, the focal point of risk is expected to shift towards emerging areas such as third-party dependencies, model complexity, and embedded or "hidden" models.[114] This section highlights some of the key risks associated with the adoption of AI in the banking sector.

A.Data-Related Risks

The extensive reliance of AI models on data poses significant challenges for the banking sector. As the BoE and FCA report explicitly states, based on industry interviews, four of the top five risks are directly related to the use of data: data privacy and protection, data quality, data security, and data bias and representativeness.[115]

First, data quality constitutes a foundational risk. The performance and integrity of any AI model are inextricably linked the accuracy, completeness, and consistency of its training data.[116] Poor data quality can lead to technically flawed outcomes, such as inaccurate outputs or suboptimal model performance. From a governance perspective, deficiencies in data quality give rise to issues of data bias and representativeness, which are directly linked to the core principle of fairness.[117] If training data fails to equitably represent all customer segments, or if the data itself contains historical societal biases, the AI model will learn and perpetuate these biases,[118] potentially leading to systemically disadvantageous impacts or unfair outcomes for certain groups in critical areas such as credit approval.[119]

However, establishing high-quality, large-scale, real-world databases is challenging. First, governing training data sources is difficult because they are often opaque or unavailable.[120] Second, the heavy use of unstructured data, like text files, social media activity, and images, creates another problem. The diversity of these formats makes it difficult to apply traditional, uniform metrics for data quality.[121]

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[111] Leitner et al. (2024).
[112] *Ibid*.
[113] *Ibid*.
[114] BoE and FCA (2025).
[115] *Ibid*.
[116] MindForge Consortium (2024), p. 106.
[117] *Ibid*., p. 10.
[118] *Ibid*.
[119] Truby et al. (2020), p. 110.
[120] Financial Stability Board (2024), p. 31.
[121] Hong Kong Institute for Monetary and Financial Research (2025), p. 19.

In China's financial market, where data ownership is highly dispersed, these challenges are especially pronounced. In practice, data controllers in the Chinese financial sector typically follow a decentralized, three-part structure:

1) Licensed financial institutions, including traditional entities such as banks, securities firms, and insurance companies.
2) Licensed non-financial institutions, which encompass payment providers holding a "Payment Business License" under the "*Administrative Measures for Non-Financial Institutions' Payment Services*" (e.g., Alipay, YeePay), as well as non-financial institutions that have obtained credit reporting licenses.
3) Unlicensed entities engaged in financial activities, primarily large technology and internet companies. These firms often gain control over financial data by securing specific financial licenses or by providing IT services to licensed institutions. This category also includes quasi-financial organizations such as microloan and guarantee companies, which perform credit intermediation functions akin to traditional banks but are generally regarded, in China's regulatory context, as unlicensed data controllers.[122]

Moreover, while robust data governance is universally recognized as essential for ensuring data quality and fitness for use,[123] achieving data sharing among dispersed entities in China's financial market presents significant challenges. Within the banking sector itself, although Chinese banks collect substantial user data, a lack of interoperability between institutions creates "data silos," leading to insufficient standardization for asset quantification and credit rating. These structural shortcomings significantly hinder the deeper integration of AI applications within the banking sector.[124]

This creates a gap between license-centric regulatory standards and the reality of dispersed data control, resulting in significant operational friction. For instance, in terms of credit reporting, the 2021 "*Measures for the Administration of Credit Reporting Business*" require internet platforms and data companies that previously supplied data directly to financial institutions to route "alternative data" (treated as a supplement to the credit data on the central bank's credit reporting platform) through licensed credit reporting agencies.[125] As of now, only three institutions nationwide hold personal credit reporting licenses.[126]

A 2022 report found that these rules, designed to "cut direct connections" (*duan zhi lian*), have increased costs for market participants and dampened the industry's willingness to share and use alternative data. Commercial banks, data intermediaries, and analytics firms all face mounting operational pressures. Data intermediaries and analytics companies have been hit the hardest as they lack licenses and their market space is shrinking. Barred from working directly with banks, they lose insight into banks' customer needs, eroding their capacity for product innovation and recommendations. Ultimately, this lowers the overall efficiency of the credit

[122] Guo (2022).
[123] Hong Kong Institute for Monetary and Financial Research (2025), p. 19.
[124] *Ibid*.
[125] Wang et al. (2023).
[126] The Paper (2024).

market and shifts operating costs onto banks and end consumers, disadvantaging long-tail users as well as micro and small enterprises that rely on such services. [127]

B. Model-Related Risks

Model performance and accuracy are primary concerns in model risk management. The significant potential for greater efficiency and substantial cost savings has made AI a favored technology.[128] However, challenges such as model bias, "hallucinations," and other technical issues may render AI models less reliable and robust.[129] According to a survey in Hong Kong, 95% of respondent financial institutions identified "model performance and accuracy" as the most critical risk to manage.[130]

The sustained effectiveness of AI has also been questioned. Typically, robust AI performance requires continuous monitoring and the maintenance of model stability.[131] Over time, however, the performance of a model may decline, which is a phenomenon commonly referred to as "model drift" or "concept drift."[132] Furthermore, due to the broad capabilities of generative AI, unanticipated usage patterns can lead to performance degradation or unexpected failure modes.[133] Without continuous and systematic monitoring, such issues may not be detected in a timely manner, thereby affecting business decisions.

Risks that emerge from the intersection of LLM-specific weaknesses (such as prompt injection) and classic API security failures (such as broken authorization) are also receiving attention.[134] When banks expose high-risk API endpoints for functions such as fund transfers or limit changes, an LLM agent can be manipulated to call out-of-policy functions. This can cause direct monetary loss, regulatory breaches, and significant audit gaps.[135]

In addition to the inherent uncontrollability of AI model performance, the "black box" nature of these systems raises serious questions about the feasibility of transparency and explainability, which are core prerequisites for effective AI model risk governance.[136] Explainability requires a disclosure of how an AI model arrives at its decisions.[137] However, the "black box" nature of complex models involves decision-making chains that cannot be fully understood or retraced. [138] The emergent, rather than predetermined, behavior of AI means that any explanation can only approximate, rather than achieve, a complete and faithful account.[139]

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[127] Center for Finance and Regulatory Technology (2022).
[128] Leitner et al. (2024).
[129] *Ibid*.
[130] Hong Kong Institute for Monetary and Financial Research (2025), p. 35.
[131] Leitner et al. (2024).
[132] MAS (2024), p. 33.
[133] Leitner et al. (2024).
[134] OWASP (undated); OWASP (2023).
[135] *Ibid*.
[136] MAS (2024), p. 25.
[137] MindForge Consortium (2024), p. 68.
[138] Azzutti et al. (2021), p. 79.
[139] *Ibid*.

Similarly, transparency, which necessitates the disclosure of information across the entire lifecycle of the AI system, is often rendered superficial by the opacity of the black box.[140]

In addition to these technical vulnerabilities, China's governance framework creates a unique structural risk defined by the scope of regulatory applicability. As detailed in Section VI, China's AI regulation is characterized by a "multi-departmental" architecture. This structure creates a bifurcation in compliance: while public-facing services are tightly constrained, internal applications often fall into potential risk-governance gaps.

A case in point is the filing regime. As a pivotal component of current model governance, it adheres to a "1+6+X" framework. "1" refers to the Cyberspace Administration of China (CAC) as the core authority; "6" refers to the six co-drafting ministries of the "*Interim Measures for the Administration of Generative AI Services*", namely the National Development and Reform Commission (NDRC), Ministry of Education, Ministry of Science and Technology (MOST), Ministry of Industry and Information Technology (MIIT), Ministry of Public Security, and National Radio and Television Administration; and "X" refers to the sectoral regulator for the service's domain.[141] For services within the Measures' scope, which is defined by whether the AI "has public-opinion attributes or the capacity for social mobilization" and is offered to the public, the framework imposes a stringent ex-ante approval mechanism. A bank's public-facing financial large model must pass the CAC's content security assessment and obtain prior consent from the sectoral regulator (the National Financial Regulatory Administration, NFRA).[142]

While a filing channel exists on paper, regulators have been conservative in practice, and approval rates for consumer-facing financial foundation models remain very low. In the financial services sector, for example, Ant Group's AntGLM and Hithink RoyalFlush's HithinkGPT (Wencai) were approved to launch before the sectoral regulator entered the filing process in December 2023.[143]

By contrast, internal or "to-B" deployments operate under a different regulatory environment. Under the Measures' scope, AI models used solely within institutions or as underlying technical infrastructure may be deemed to lack significant public-opinion or social-mobilization attributes and therefore are not subject to the complex dual-filing process. This regulatory vacuum leaves China's banking sector broadly exposed to model risk. If risks spill over, regulators may invoke higher-level laws to impose retrospective penalties, creating substantial legal uncertainty.

C. Systemic Risks

When financial institutions adopt mainstream AI models to optimize efficiency, they may inadvertently increase the risk exposure of the entire financial system, a risk that cannot be

[140] MindForge Consortium (2024), p. 68.
[141] Gao and Yan (2025).
[142] Shanghai Financial Information Industry Association (2025).
[143] Gao and Yan (2025).

borne by any single institution. This risk amplification mechanism stems from two main factors: internal effects arising from "technological penetration" and external risks caused by "supplier concentration."[144]

"Technological penetration" manifests at two levels. Vertically, it refers to the increasing reliance on AI for core processes within a single financial institution.[145] Horizontally, it signifies the growing number of financial entities adopting AI technology.[146] This dual penetration, across both industry breadth and individual depth, intensifies the entire financial system's dependency on AI, becoming a significant driver of the systemic risk of model homogeneity and herding effects.

As AI technology becomes widely adopted in the banking sector, numerous financial institutions tend to use the same or similar mainstream AI models for risk assessment or trading decisions, leading to model homogeneity.[147] This homogeneity, often accompanied by common technical flaws or biases, can cause systemic market distortions, thereby exacerbating asset price volatility, increasing market correlation, and even triggering herding behavior or bubbles.[148]

On the other hand, "supplier concentration" represents another category of external systemic risk. Namely, the reliance on key third-party providers.[149] If a majority of financial institutions depend on the same or similar foundation model providers, these suppliers can become systemic single points of failure.[150] According to the BoE and FCA report's survey, the market for third-party providers of cloud services, models, and data is highly concentrated.[151] Over-reliance on a few suppliers not only weakens the operational foundation of the financial system but also exacerbates "too-big-to-fail" externalities, further increasing systemic risk.[152]

Furthermore, cybersecurity threats also pose an increasingly severe systemic risk. As banks become more reliant on third-party cloud services and data providers, their network perimeters become more blurred. This increases the risk of data breaches and cyberattacks. As indicated in the BoE and FCA report, cybersecurity is regarded as the highest systemic risk both now and over the next three years.[153] At the same time, malicious actors may exploit AI tools to enhance cyberattacks, for example, by generating more persuasive phishing emails. This lowers the entry barrier for hackers and increases the effectiveness of such attacks.[154]

D.Accountability Challenges

[144] Leitner et al. (2024).
[145] *Ibid*.
[146] *Ibid*.
[147] *Ibid*.
[148] *Ibid*.
[149] *Ibid*.
[150] *Ibid*.
[151] BoE and FCA (2025).
[152] Leitner et al. (2024).
[153] BoE and FCA (2025).
[154] Leitner et al. (2024).

Given the potential risks posed by AI, the closely related issue of liability determination should also receive heightened attention. Traditionally, accountability frameworks rely on clearly identifiable responsible parties. Yet the complexity, autonomy, and multi-actor nature of AI systems make it difficult to assign responsibility to any single individual or entity, creating practical dilemmas for governance and compliance.[155]

At the internal governance level, accountability problems manifest as inadequate oversight of AI use cases and models, compounded by unclear lines of responsibility. A key concern is the lack of effective human intervention at critical decision points, which prevents timely correction when errors occur.[156] This challenge is illustrated in a report from the Hong Kong Institute for Monetary and Financial Research, where many respondents expressed concern that senior managers nominally accountable for AI-driven decisions often lack the technical expertise and training necessary to assume real responsibility.[157]

These internal challenges are further exacerbated by external legal and regulatory gaps, as a fragmented and evolving external regulatory landscape hinders institutions from establishing clear and robust internal accountability frameworks. Financial institutions in Hong Kong, for instance, have explicitly requested clearer guidance on how accountability should be divided between developers and end-users, particularly concerning data quality, ownership, localization, residency, sharing, and traceability.[158]

VI. Managing the Risks through Regulation

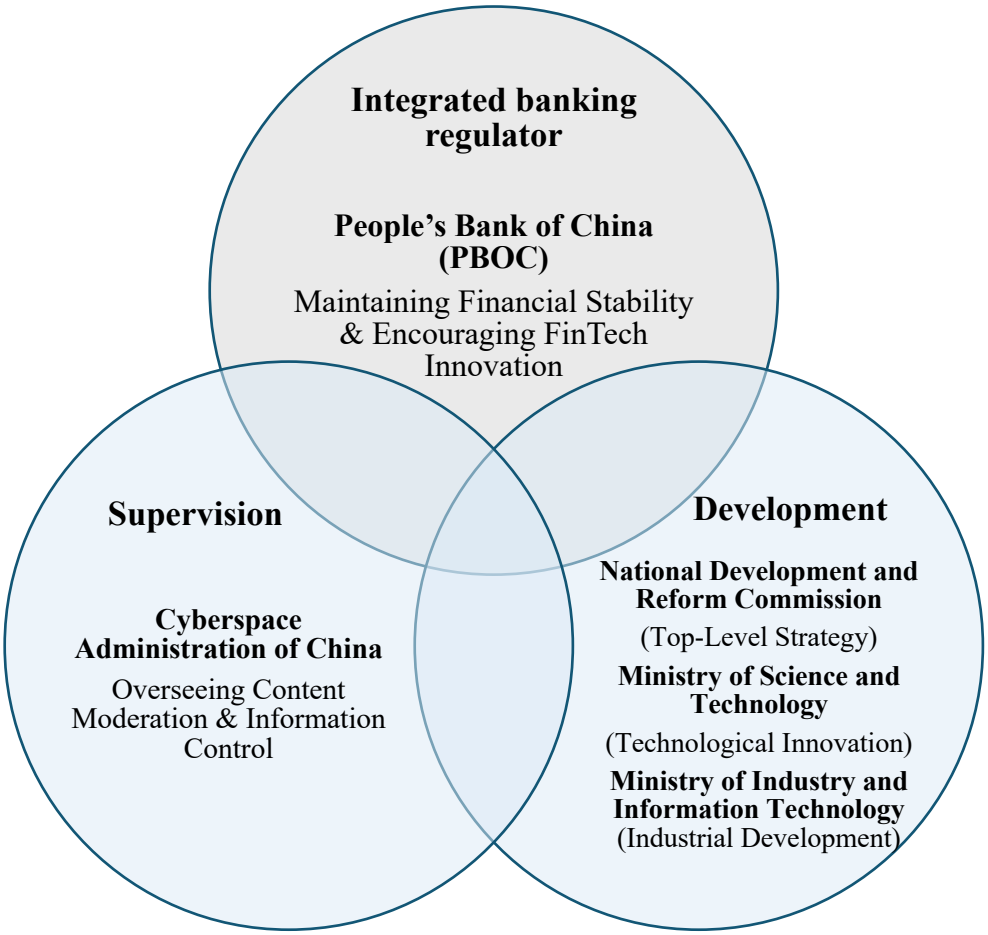
Having outlined the various risks of AI in banking, this article will now discuss how these risks can be addressed through regulatory measures. Arguably, the application of AI in banking challenges existing paradigms of financial regulation and corporate governance.[159] This calls for a re-examination of a fundamental question in financial markets: how can regulators effectively manage the emerging risks and protect financial consumers while simultaneously fostering innovation in the banking sector?

A. Regulatory Framework

As illustrated in Diagram 1 below, Chinese regulators overseeing AI in banking are striving to strike a balance between financial innovation and risk management. On one side stands the supervision-focused CAC; on the other is a pro-growth coalition comprising the MOST, the MIIT, and the NDRC. Within the financial sector, the PBOC leads sector-specific oversight of AI in banking.

Diagram 1: Key Authorities in China's AI Governance

[155] Santoni de Sio and Mecacci (2021).
[156] MindForge Consortium (2024), p. 69.
[157] Hong Kong Institute for Monetary and Financial Research (2025), p. 39.
[158] *Ibid*., p. 44.
[159] Crisanto et al. (2024).



This complex institutional structure creates a regulatory landscape characterized as "multi-departmental, multi-level, and point-based." While specific "hard laws" exclusively for AI banking have yet to be introduced, a patchwork of regulations currently governs the sector. For instance, the "*Specification for the Evaluation of Financial Applications of AI Algorithms*" functions as a non-binding industry standard intended for reference, evaluating technical indicators like safety and explainability. In contrast, the "*Measures on IT Outsourcing Risk of Banking and Insurance Institutions*" impose mandatory management requirements on third-party risks, while the CAC's "*Interim Measures for the Management of Generative AI Services*" target specific application modalities.

Consequently, many AI financial models, such as internal trading algorithms or decision-support tools for major capital allocation, primarily rely on soft law or self-regulatory guidance from industry associations.[160] However, this framework creates uncertainty. While these regulations operate within their respective silos, it remains unclear how the overlapping responsibilities among these bodies will be resolved, as the system still lacks a unified, top-level governance framework to coordinate them effectively.

[160] KPMG (2020).

Beyond the horizontal coordination issues mentioned above, vertical management within China's banking sector also faces significant challenges. The implementation of the Basel Accords in China reveals a distinct "double standard." While regulators have successfully implemented a tiered regulatory approach under Pillar 1 (quantitative capital requirements), classifying banks into three tiers with differing calculation methods, this differentiated arrangement has not been effectively extended to Pillar 2 (the supervisory review process). Currently, qualitative management requirements, such as reputational risk stress testing, are often applied uniformly to all banks without distinction.[161]

However, the risks introduced by AI, such as algorithmic explainability and ethical review, inherently align more closely with the qualitative scope of Pillar 2 than with simple quantitative calculations. If the Proportionality Principle is not genuinely implemented within "Pillar 2-style" regulation, small and medium-sized banks may be forced to rigidly adopt complex model verification standards designed for Global Systemically Important Banks (G-SIBs). This ultimately results in AI risk management devolving into "performative compliance," failing to address actual issues.[162]

This issue is exacerbated by the structure of the Chinese banking sector. Chinese banking regulation is characterized by distinct "verticalization" and a "rules-based" approach, creating unique structural constraints for AI governance. Under the four-level vertical hierarchy of "General Administration—Provincial Bureau—Field Office—Sub-branch," regulatory policies must penetrate down to approximately 4,000 banking institutions with vastly different scales and endowments. Due to the insufficient implementation of the Proportionality Principle, regulators often default to a "one-size-fits-all" logic. Consequently, resource-constrained small and medium-sized banks find universal, high-standard AI regulatory requirements, such as complex model explainability reviews or stress tests, to be "unattainable." They are thus compelled to resort to "formal compliance" merely to avoid liability, rather than engaging in substantive risk control.[163]

To resolve this impasse and move beyond a static, rules-based approach, it is necessary to examine the theoretical trade-offs inherent in regulating emerging technologies. Brummer and Yadav's theory highlights why regulators struggle to reconcile these three objectives simultaneously: *market integrity, regulatory simplicity, and financial innovation*.[164] To navigate this, they propose a linear evolutionary pathway as an ideal governance template: first, strengthen information sharing through domestic coordination and regulatory sandboxes to accurately identify technology-specific risks; next, iterate rules along a "spectrum of regulatory responses" (from informal guidance to pilots and, ultimately, formal licensing), starting with non-binding guidance, progressing to trial-and-error via pilots and sandboxes, and only then moving to formal licenses or legislation.[165]

[161] Luo (2025).
[162] *Ibid*.
[163] *Ibid*.
[164] Brummer and Yadav (2018).
[165] *Ibid*.

China's experience with the rise and collapse of P2P lending shows how this ideal linear chain can break at two critical points, offering a stark warning for AI-era regulation in the banking sector.[166] The first break occurred at the information stage: an early laissez-faire stance created a regulatory vacuum. Without mechanisms and channels for early information sharing, regulators could not distinguish information intermediaries from illegal shadow banks, missing the window to identify systemic risks. The second break was in regulatory evolution: China failed to achieve a "co-evolution" of regulation and innovation.[167] Concerned about administrative liability and resource constraints, regulators did not use experimental tools such as sandboxes to iteratively refine rules. Instead, the sector was allowed to expand unchecked until it became unmanageable. Lacking the buffering and data that intermediate steps would have provided, and facing systemic risks threatening social stability, regulators bypassed the "risk management" phase and resorted to administrative measures to shut the industry down entirely.[168]

B. Regulatory Strategy

On regulatory strategy, Singapore offers a useful exemplar of gradual yet adaptive evolution. Singapore's banking sector currently adopts a cautious stance toward AI, reflecting both financial institutions' strong emphasis on compliance and the Monetary Authority of Singapore's (MAS) prudential approach to AI in finance. Notably, in sharp contrast to relatively conservative industry adoption, MAS has been proactive in setting expectations and building rules, signalling a regulatory posture that actively steers industry development.[169]

In 2018, MAS and the financial industry jointly introduced the FEAT principles (Fairness, Ethics, Accountability, and Transparency) and subsequently worked to operationalize them through the Veritas initiative. Veritas developed a systematic methodology for implementing FEAT in practice, with a prominent focus on AI model governance, ensuring the technical compliance of specific algorithms, by using quantitative metrics to validate fairness and transparency.

The rise of generative AI, however, has exposed the limits of a purely model-centric approach. Technical governance alone cannot capture the full spectrum of real-world risks. Regulators must engage with specific application contexts to identify and manage scenario-dependent risks. In response, MAS launched Project MindForge to refresh and broaden its governance paradigm. Led by MAS and bringing together major financial institutions alongside technology firms (such as Google Cloud and Microsoft), this cross-industry consortium uses a public–private collaboration model to co-develop risk management frameworks tailored to frontier technologies such as generative AI.

[166] Ding et al. (2025).
[167] *Ibid*.
[168] *Ibid*.
[169] MindForge Consortium (2024).

Project MindForge shifts the emphasis from single-point model governance to a diversified, multi-focus regime spanning both use case-level and enterprise-wide governance.[170] This transition is driven by an explicit "co-creation" logic: through the Project MindForge platform, MAS collaborates directly with C-suite leaders (e.g., Chief Data Officers, Chief AI Officers) in constructive regulatory consultations.[171] This process enables joint exploration of technical feasibility boundaries and the formation of industry consensus. Building on that consensus, the consortium released the Project MindForge AI Risk Management: Executive Handbook in November 2025 as a best-practice reference. As a follow-on, MAS issued a Consultation Paper on Guidelines on Artificial Intelligence Risk, aiming to codify industry practice into concrete regulatory expectations, with formal implementation planned for early 2026.[172]

The new governance paradigm proposes an accountability system spanning the full AI lifecycle, underpinned by three core features. First, it establishes enterprise-level accountability by integrating AI into firms' macro risk management structures.[173] Following the logic of top-down oversight, MAS expectations and the Project MindForge framework explicitly assign overall accountability for AI governance to the Board and Senior Management, while recommending the establishment of a dedicated cross-functional committee to address organizational challenges where risk exposure is material.[174] Second, it introduces scenario-based governance grounded in risk materiality. Regulators require financial institutions to assess each AI use case along three dimensions: Impact, Complexity, and Reliance.[175] Third, it emphasizes end-to-end lifecycle management, embedding controls from data acquisition through deployment and monitoring.[176] Crucially, the framework applies proportionality: high-risk use cases face rigorous independent validation and red-teaming, while low-risk use cases receive lighter-touch oversight, thereby optimizing regulatory resources while avoiding undue constraints on innovation.[177]

In contrast to Singapore's *"regulation-led, cautious adoption*" pathway, China's financial AI landscape is characterized by "*practice-led, asymmetric regulation*." This approach appears driven largely by the imperative to maintain strategic advantage amid intense global technological competition. To secure an edge in critical technologies, China has, in practice, pursued a more accommodating, if not tacitly permissive, stance toward non-public-opinion financial AI applications (especially B2B and internal management), leveraging large-scale deployment to accelerate iteration and real-world uptake.

This has produced an inverse relationship between regulatory intensity and deployment speed. In Singapore, intensive regulatory consultations (e.g., Project MindForge) have established relatively stringent, concrete compliance thresholds that encourage caution at the application

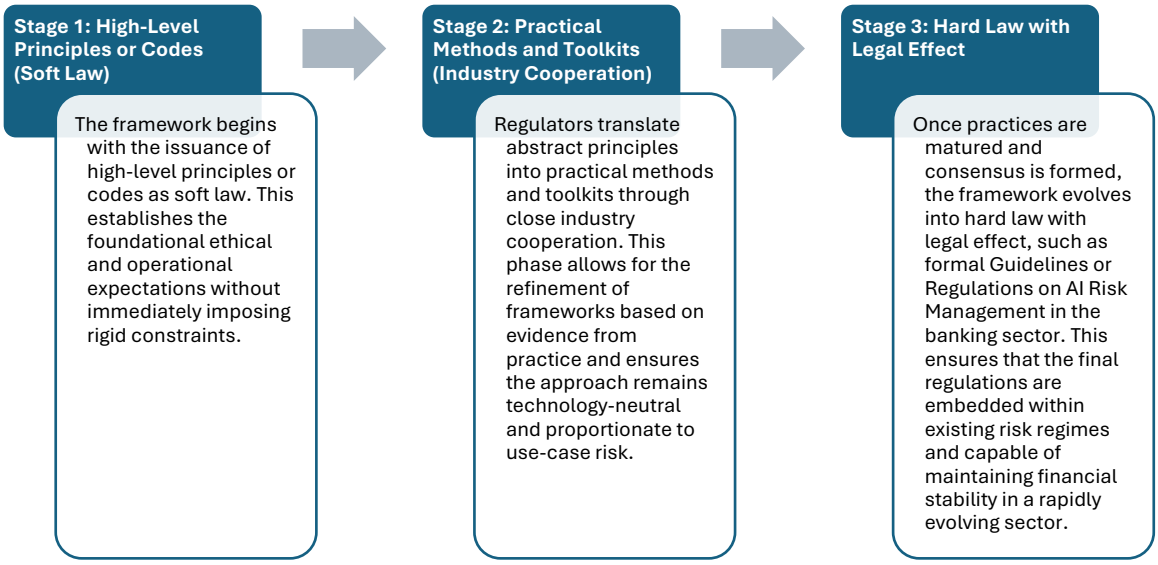
[170] MindForge Consortium (2025), p. 3
[171] MindForge Consortium (2025)
[172] MAS (2025)
[173] MindForge Consortium (2025), p. 14
[174] MindForge Consortium (2025), p. 13; MAS (2025), p. 7
[175] MAS (2025), p. 18
[176] MAS (2025), p. 9
[177] MAS (2025), p. 6, 25; Association of Banks in Singapore (2025), p. 28)

layer, whereas Chinese banks enjoy wider latitude for trial and error in internal use cases, resulting in faster rollout. Yet, this apparent dynamism may conceal unrecognized risks.

Given limited public information, it remains unclear whether China has engaged in an equally dense process of regulatory interaction and consensus-building in crafting financial AI rules. Based on the current ecosystem, and in contrast to Singapore's institutionalized, transparent regulator–industry co-creation under Project MindForge, Chinese authorities appear to maintain a stance of regulatory modesty or relative forbearance toward financial AI applications outside the tightly supervised public-opinion domain. While this strategy has encouraged substantial short-term innovation, it also implies the absence of a refined, lifecycle-spanning governance framework shaped through robust compliance deliberation. Consequently, it may face future risks of technological drift or retroactive compliance exposure due to insufficient ex-ante constraints.

Building on the preceding theory and comparative analysis, this chapter develops a framework for analyzing China's AI-driven financial transformation. Although it remains uncertain whether AI's benefits in finance definitively outweigh its costs, regulators should balance innovation with systemic stability by drawing lessons from the P2P era. Rather than waiting for risks to accumulate into a systemic crisis, they should prioritize early detection through Regtech and related tools.

Diagram 2: The "Soft-to-Hard" Law Regulatory Evolution Roadmap for Regulating AI in Banking



Drawing on Singapore's experience, to effectively govern the rapidly evolving AI banking sector, it is proposed that regulators should adopt a principled, risk-based, and adaptive framework. As illustrated in Diagram 2 above, this roadmap visualizes a "soft-to-hard" law evolutionary pathway, depicting how governance may progress from initial high-level

principles (Stage 1), through industry-led operationalization (Stage 2), and ultimately solidify into binding regulations (Stage 3) once practices have matured.

In the context of transitional economies like China, this general framework undergoes specific adaptations. Specifically, the "soft law" of Stage 1 takes the form of industrial policy. At this stage, law and policy primarily serve a signaling function. That is clarifying strategic priorities in specific technologies and steering resources and expectations toward policy objectives.[178]As markets mature, however, the state's role should pivot from direct capital intervention to empowerment through the rule of law, implying a fundamental shift in the function of law. [179] In this new phase, the law should not merely transmit policy signals. It should reassert its role as a market cornerstone, establishing clear behavioral boundaries and a predictable institutional framework that defines the rights and obligations of market participants.

Singapore's gradual, adaptive model of regulatory evolution offers valuable lessons. It emphasizes calibrating the timing and intensity of regulatory intervention to the maturity of the technology and the materiality of the risks, thereby preventing the buildup of systemic risks while preserving room for trial and error to spur innovation. China is not starting from scratch in regulating generative AI. Instruments such as the "*Interim Measures for the Administration of Generative Artificial Intelligence Services*" have already established an institutional foundation and governance experience. The challenge now is to translate these general rules into finely tuned, adaptive implementation for high-risk, high-externality vertical sectors, particularly finance and banking. This calls for a shift in regulatory governance from merely signalling policy to clearly defining behavioural boundaries.

In doing so, China's financial regulators should prioritize structured industry dialogue. Drawing on the "co-creation" approach of Singapore's Project MindForge, they should conduct constructive technical consultations with financial institutions to ensure that rulemaking is technologically feasible, avoids both regulatory vacuums and overreach, and, while unlocking innovation, safeguards long-term financial stability through precise and well-calibrated governance.

C. The Role of RegTech and SupTech

The widespread adoption of AI, big data, and related technologies has made risk management in financial institutions increasingly reliant on intelligent, technology-driven systems. A static, rules-based regulatory approach to overseeing AI in banking is insufficient. SupTech refers to the application of new technologies by authorities to improve their supervisory capabilities, while RegTech refers to the use of new technologies by institutions to meet their regulatory requirements. [180] Together, RegTech and SupTech can equip regulators and financial institutions with tools sophisticated enough to match the complexity of emerging financial technologies.

[178] Zhang (2025).
[179] Lin and Hong (2022), p. 143.
[180] See Financial Stability Board (2020), p. 1.

1. RegTech by Financial Institutions

RegTech plays an important role in fraud detection, Anti-Money Laundering (AML) and Know Your Customer (KYC) tasks.[181] Intelligent risk-control platforms enable financial institutions to monitor customer transactions in real time and detect potential risks such as money laundering and fraud.[182] Empirical data from Chinese-listed banks between 2015 and 2022 shows a significant negative correlation between the deployment of internal RegTech and bank liquidity risk. These findings suggest that technology-enhanced internal regulation strengthens banks' risk management and compliance capabilities, thereby tempering their institutional risk appetite.[183]

For example, to enhance intelligent anti-fraud decision-making and enable precise analysis of fraud-related accounts,[184] ICBC has addressed vulnerabilities in telecom network fraud capital chains by developing an advanced monitoring and analysis platform. This platform features a comprehensive three-tier anti-fraud system comprising proactive prevention, intelligent control, and integrated management. By combining customer profiling, AI-powered models, and blacklist databases, the system delivers round-the-clock real-time alerts and interception capabilities. Its architecture encompasses front-end prevention, mid-level intelligent risk analysis, and back-end multi-party collaboration. As of August 2024, this system had intercepted over 500,000 fraudulent telecom transactions, preventing customer losses of nearly 10 billion RMB.[185]

China Industrial Bank has established itself as a leader in AML compliance innovation with its self-developed AML-GPT system, known as "Suixing Write." By incorporating generative AI into anti-money laundering procedures, the system automates the creation of structured suspicious transaction reports. This process analyses behavioral patterns, entity data, and the transactional characteristics of suspicious clients. As a result, the system significantly improves both the efficiency and quality of AML case detection and reporting. [186]

Private RegTech vendors have also made remarkable progress in enhancing AML and KYC capabilities. For example, Lingyan Technology has pioneered AI-driven solutions specifically tailored to meet compliance requirements and align with the operational needs of banks. By leveraging LLMs, multimodal feature fusion, and generative AI, the company has transformed KYC practices from static identity verification to dynamic customer due diligence. Its advanced AI-based platform integrates customer behavior and transactional data with real-time risk monitoring systems. This innovation significantly enhances the accuracy and efficiency of

[181] Zetzsche et al. (2023), p. 445.
[182] KPMG (2025), p. 78.
[183] Renmin University FinTech Institute (2024).
[184] Financial Electronics (2024).
[185] *Ibid*.
[186] Industrial Bank (2024).

AML operations, exemplifying the growing sophistication of KYC compliance infrastructure.[187]

2. SupTech by Regulators

In recent years, China has accelerated the research and development of SupTech. Regulators have explored the application of big data and AI technologies for more penetrating, proactive supervision, with the aim of building a regulatory technology system that meets the evolving demands of financial oversight.

For instance, a regulatory branch, in partnership with a local commercial bank, launched the "Regulatory Probe" project in 2020.[188] This initiative is designed to enable proactive supervision of commercial banks. By digitizing regulatory policies and compliance requirements, the project collects risk information and business feature data in real time, shifting regulation from post-event review to real-time monitoring. This approach ensures the authenticity of the regulatory environment, improves the accuracy of regulatory methods, and effectively addresses compliance needs. Moreover, with preset security isolation measures, the system avoids impacting external data or programs, thereby substantially reducing compliance costs for financial institutions.[189]

For another example, the Jilin Province microloan industry regulatory system, in collaboration with a technology firm, integrated an LLM-based "AI Regulatory Assistant" with financial expertise, marking a significant leap from "manual judgment" to "intelligent analysis" in local financial regulation in 2025.[190] The system provides intelligent Q&A on financial risks and expands analytical capabilities to areas such as risk analysis, operational analysis, financing analysis, and industry analysis. Additionally, it features a dynamic monitoring system spanning six dimensions: corporate financial warnings, operational information, relationship mapping, public opinion monitoring, legal litigation, and trends in debt and equity markets.[191]

3. Putting the Human in the Loop

While RegTech and SupTech provide sophisticated technological tools to match the complexity of AI, reliance on technology alone is insufficient to mitigate the unique risks of "black box" algorithms, such as information asymmetry and data dependency. Effective regulation therefore requires "putting the human in the loop" (HITL) to ensure accountability where purely technological solutions fail.

This approach posits that regardless of the level of automation, human judgment must remain central to critical decision-making processes. Regulators should strengthen internal governance by imposing personal responsibility on senior management for the AI systems deployed within

[187] *Ibid*.
[188] Financial Electronics and Bian (2022).
[189] *Ibid*.
[190] Jilin Provincial Local Financial Supervision Administration (2025).
[191] *Ibid*.

their domain. Under such a framework, key function holders are required to perform mandatory AI due diligence and ensure the "explainability" of algorithmic outputs. This ensures that for critical financial service, such as large-value lending or systemic risk monitoring, humans retain the authority and technical capacity to review, override, or even "switch off" AI systems when they produce unexpected or harmful outcomes.[192]

Recent regulatory guidance in Singapore reinforces this by operationalizing HITL as a critical guardrail. The Association of Banks in Singapore (ABS) recommends that HITL moderation should be proportionate to risk, employing systematic checks such as output sampling, targeted fact-checking, or even co-piloting, where humans review every output in real-time.[193] Similarly, the MAS Consultation Paper on Guidelines on Artificial Intelligence Risk Management emphasizes that effective human oversight requires clear role assignment and, crucially, equipping personnel with the necessary competence and authority to intervene in AI operations.[194]

D.Regulatory Sandbox

One notable policy tool for addressing this dilemma is the "regulatory sandbox". Many countries, including China, have formally adopted it to provide a controlled environment for technological innovation in financial sector.[195]

AI banking applications are often characterized by complexity and opacity, necessitating a "safe" environment where firms can test their products within defined thresholds, such as limits on client numbers or risk exposure, over a fixed period. This isolation ensures that the risks inherent in testing new products are not transferred to consumers or the broader financial system. The key to the regulatory sandbox as a regulatory strategy lies in its transitional nature. The sandbox is not a permanent state but a temporary phase. Upon "exiting the sandbox" after testing, firms are only permitted to deploy their solutions more broadly once they have demonstrated the feasibility and safety of their AI models within the sandbox parameters, after which they must fully comply with all relevant financial regulations.[196]

China's regulatory sandbox is officially known as the FinTech Innovation Regulatory Pilot. It aims to foster FinTech innovation by offering structured support and incubation opportunities.[197] In December 2019, the PBOC launched this pilot program, with Beijing leading its initial implementation.[198] Since then, regional PBOC branches have publicized a variety of FinTech applications developed within these regulatory sandboxes, including Shanghai Pudong Development Bank's anomaly transaction monitoring service based on privacy computing technology, and Shanghai Rural Commercial Bank's agricultural industry-

[192] Zetzsche et al. (2020), pp. 4, 38, 44–47.
[193] Association of Banks in Singapore (2025), pp. 31–32.
[194] MAS (2025), p. 21.
[195] A regulatory sandbox is a "safe space" in which businesses can test innovative products, services, business models and delivery mechanisms without immediately incurring all the normal regulatory consequences of engaging in the activity in question. See FCA (2015).
[196] Bromberg et al. (2017).
[197] China Business Journal and Chen (2023).
[198] *Ibid*.

chain financing service powered by big data.[199] Participating institutions in the sandbox span the breadth of China's banking sector, including not only large state-owned commercial banks, but also joint-stock commercial banks, city and rural commercial banks, and rural credit cooperatives.[200]

It is worth observing that, compared to the exit mechanism, China's approach to risk control appears particularly discernible in its entry mechanism. In contrast to early models in the UK or Singapore, which allowed tech start-ups to apply independently , China's regulatory sandbox initially seemed to establish a clear dominance of licensed financial institutions. It primarily targeted banking institutions, typically requiring technology companies to collaborate with licensed entities to participate in testing.[201] This approach may be interpreted as a method to achieve indirect risk control by restricting admission to specific regulated entities. However, relevant data from KPMG (2020) suggests that such strict entry restrictions may not have significantly impeded the cross-sector propagation and permeation of technology. The early batches of pilot projects indicate that while some projects were led solely by financial institutions, nearly half appeared to adopt a model of joint application by financial institutions and technology companies.[202]

Currently, there are indications that the entry mechanism of China's regulatory sandbox may be gradually evolving towards the principle of "competitive neutrality," placing greater emphasis on the compliance and risk controllability of business activities themselves. In subsequent batches, it has been reported that some pilot regions have begun allowing both licensed financial institutions and FinTech companies to submit testing applications independently. This trajectory suggests a growing willingness on the part of regulatory authorities to provide technology entities with a more independent space for innovation, provided that risks remain controllable.[203]

VII. Conclusion

The integration of AI into the banking sector represents a profound structural transformation characterized by high uncertainty, rapid technological evolution, and inherent opacity. As this article has demonstrated, AI offers an alternative solution to address the "Financial Inclusion Trilemma" by enhancing efficiency and expanding access. However, it also introduces complex risks ranging from data integrity issues and model opacity to systemic vulnerabilities. These are risks that traditional regulatory frameworks may be ill-equipped to manage. Consequently, the role of regulation is increasingly critical in safeguarding financial stability without stifling the innovation that fuels economic growth.

Navigating this landscape may necessitate a fundamental shift in regulatory capability and strategy. First, given the high uncertainty and new risks posed by AI, the regulators should

[199] *Ibid*.
[200] *Ibid*.
[201] Zhu (2022).
[202] KPMG (2020).
[203] International Monetary Institute (2022).

adopt a risk-based and adaptive framework for AI in banking. Such an approach can begin with high-level principles or codes issued as soft law, translate these into practical methods and toolkits through industry pilot programmes, handbooks and guidelines, and ultimately evolve into hard law with legal effect (such as Rules or Regulations on AI Risk Management).

Moreover, traditional static regulation should evolve toward dynamic and technology-enabled oversight. In this context, the deployment of RegTech by financial institutions and SupTech by regulators is a vital component in providing real-time visibility needed to monitor "black box" algorithms. However, technology alone may be insufficient if not matched by human capital. Enhancing regulatory capacity arguably requires a concerted effort to attract multidisciplinary talent. At the same time, it remains important for financial institutions to elevate the sophistication of their internal governance, potentially by empowering roles such as CTOs and dedicated Chief AI Officers. Institutional reforms within regulatory bodies, similar to the MAS' Fintech & Innovation Group, could serve as a model for fostering this dual capacity of supervision and innovation facilitation.

Furthermore, to balance financial stability with innovation in a rapidly evolving banking sector, the regulatory framework should be technology-neutral, proportionate to use-case risk, embedded within existing risk regimes, and refined through close consultation with financial institutions and evidence from practice. Beyond domestic regulatory reforms and efforts, international cooperation remains important for establishing consistent global standards. As illustrated by the strategic partnership between the MAS and UK FCA,[204] such cross-border collaboration may serve as a vital mechanism to help harmonize expectations and facilitate the realization of AI's transformative potential within a secure banking system.

[204] MAS and FCA (2025).

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