

The Impact of Artificial Intelligence on Financial Investment and Risk Management

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Abstract. Taking Chinese enterprises as the core research samples, this paper systematically analyzes the dual impacts of artificial intelligence on financial markets by referring to reports of internationally renowned organizations and global fintech practice cases. This study constructs a three-dimensional collaborative analytical framework and clarifies the internal mechanism of artificial intelligence in eliminating financial frictions and improving capital allocation efficiency. The study finds that the dividends of artificial intelligence present non-inclusive characteristics, and asset-light enterprises fall into the dilemma of digital divide due to insufficient data endowment. Meanwhile, although artificial intelligence promotes the improvement of the whole-process efficiency of financial risk control, it exacerbates systemic risks from the dimensions of market operation, cybersecurity and cross-market transmission. The conclusions of this paper indicate that the core of unlocking the value of artificial intelligence lies in the adaptability between technology application and regulatory systems, providing theoretical reference and practical basis for balancing financial innovation and financial security.

Keywords: artificial intelligence, financial market, financial friction, systemic risk, capital allocation efficiency

1. Introduction

In recent years, the penetration of artificial intelligence technology in the financial sector has accelerated significantly, covering the entire financial business chain such as intelligent credit approval, algorithmic trading, compliance risk control and customer service, and has become the core driving force for the digital transformation of the financial industry. At the same time, the financial application of artificial intelligence technology has triggered widespread controversy in the industry: on the one hand, it is regarded as a key technology to alleviate corporate financing constraints and improve the operational efficiency of financial markets; on the other hand, its potential risks have attracted great attention from global regulators and academia. From the perspective of domestic practice, artificial intelligence innovation and development pilot zones have been launched one after another, effectively driving enterprise digital investment and the upgrading of financial services. From the international perspective, the International Monetary Fund (IMF) and the Financial Stability Board (FSB) have successively released early warning reports, clarifying that market flash crashes and cyberattack incidents caused by artificial intelligence have become new

risks to global financial stability. Against this realistic background, it is of important theoretical value and practical significance to systematically explore the all-round impact of artificial intelligence on financial markets and clarify its mechanism of action and potential risks.

In terms of positive effect research, Li et al. [1], based on empirical data of more than 1 million underserved financial groups worldwide, confirmed that AI-enabled credit scoring models can effectively reduce the misallocation of credit resources, alleviate financial exclusion, and significantly reduce corporate financing constraints. Guo et al. [2] further combined machine learning and text analysis methods to find that the artificial intelligence technology of financial institutions can accurately identify the problem of enterprise information distortion through unstructured data analysis capabilities, and fundamentally alleviate information asymmetry between banks and enterprises. Wang et al. [3], based on the theoretical framework of the financial accelerator, systematically verified that artificial intelligence technology can significantly promote the investment expansion of real enterprises and smooth investment fluctuations by weakening financial market frictions. In terms of risk identification research, Xiao [4] revealed that with the wide application of artificial intelligence technology in the field of financial investment, the convergence of algorithmic decision-making is likely to trigger market resonance, which will intensify collective buying or collective selling behavior under market pressure and amplify price fluctuations. Meanwhile, the study emphasized that the unpredictability and high complexity of deep learning models will form algorithmic black boxes, leading to opaque decision-making logic and untraceable potential deviations, which in turn trigger systemic model risks. Adrian et al. [5] and the IMF [6] further pointed out that artificial intelligence technology lowers the threshold and implementation cost of cyberattacks and exacerbates the vulnerability of financial infrastructure.

Existing research still has obvious shortcomings. First, the research perspective is relatively single, mostly focusing on a single mechanism of action, and has not yet systematically explained the complete logical chain of artificial intelligence in eliminating financial frictions. Second, the depth of heterogeneity analysis is insufficient, mostly limited to the industry level, and has not deeply explored differences in deep dimensions such as technology types and institutional environments. Third, the research paradigm is fragmented, separating efficiency improvement and risk derivation into separate studies, and lacks a unified analytical framework to integrate the dialectical relationship between the two.

This study integrates authoritative regulatory reports of the IMF and FSB with global fintech practice data to carry out multi-source cross-validation, and constructs a three-dimensional collaborative analysis paradigm of "micro-level reconstruction of information trust – meso-level correction of capital allocation – macro-level smoothing of cyclical fluctuations", systematically revealing the internal mechanism of artificial intelligence in eliminating financial market frictions. On this basis, the study analyzes the unbalanced characteristics of artificial intelligence empowerment effects from three dimensions: enterprise endowment differences, technology penetration degree and external institutional environment. At the same time, it incorporates efficiency improvement and risk amplification into a unified analytical framework to dialectically examine the dual impact mechanism of artificial intelligence on financial markets. This study is committed to making up for the cognitive blind spots of existing research, clarifying the underlying transmission chain of artificial intelligence acting on financial markets, and providing solid theoretical support and decision-making reference for financial institutions to deepen intelligent transformation and regulatory authorities to build an adaptive regulatory system.

2. The three-dimensional collaborative elimination system of frictions constructed by artificial intelligence in financial market investment

The promoting effect of artificial intelligence on enterprise investment, different from traditional fintech, is characterized by constructing a three-dimensional collaborative system of micro-level reconstruction of information trust – meso-level correction of capital allocation – macro-level smoothing of cyclical fluctuations, which fundamentally eliminates financial frictions restricting enterprise investment. Compared with the partial efficiency improvement of traditional fintech, artificial intelligence breaks through the historical data analysis paradigm and turns to future trend prediction, realizing the dual improvement of capital allocation efficiency and enterprise investment willingness. This mechanism has been cross-validated by quasi-natural experiments in the Chinese market, IMF global observation data and industry practice cases, and is robust.

2.1. Three-dimensional collaboration: eliminating financial market frictions in all aspects

2.1.1. Micro dimension: information production revolution solves the dilemma of bank-enterprise trust

The core friction of financial markets is the lack of trust caused by information asymmetry. Traditional finance relies on limited structured data for credit decision-making, making it difficult to accurately assess the true value of enterprises. The problems of adverse selection and moral hazard are prominent, which become the core cause of financing constraints for small and medium-sized enterprises. Artificial intelligence promotes the iteration of information production mode from manual sampling verification to full-volume real-time data analysis, and reconstructs the foundation of bank-enterprise trust. On the one hand, generative artificial intelligence technology realizes the industrialized processing of unstructured data, and large language models surpass most human analysts in the analysis of financial reports and contract texts, significantly reducing the inhibitory effect of information asymmetry on enterprise investment. On the other hand, artificial intelligence can automatically cross-validate multi-source data and monitor capital flows in real time, effectively curbing moral hazard and reducing the post-loan management costs of financial institutions.

2.1.2. Meso dimension: data-driven credit revolution corrects capital misallocation

The traditional collateral-centered credit model in finance leads to the concentration of capital in asset-heavy large enterprises, and asset-light innovative enterprises have long faced financing difficulties. Artificial intelligence builds a credit evaluation system with data as the core, reversing the traditional pattern of capital misallocation. Based on future cash flow prediction as the decision-making basis, it integrates hundreds of non-financial indicators to build an enterprise repayment capacity prediction model, which significantly corrects the traditional credit misallocation problem and guides capital to flow to high-growth fields. At the same time, generative artificial intelligence activates the trading markets of illiquid assets such as corporate bonds and emerging market bonds, and embedded financial technology embeds financing services into the whole process of enterprise operation, greatly shortening the capital delivery cycle.

2.1.3. Macro dimension: counter-cyclical adjustment smoothes economic cycle fluctuations

The core defect of traditional finance is that the depreciation of collateral during economic downturns triggers credit contraction, forming a vicious circle of economic downturn – collateral

depreciation – credit contraction – economic deterioration. Artificial intelligence shifts the core of credit decision-making from collateral to future cash flow, breaking the logic that collateral value determines credit supply. During economic downturns, artificial intelligence still provides credit support to enterprises with stable cash flow, which not only expands enterprise investment scale, but also suppresses the dual deviations of over-investment and under-investment, playing a role in stabilizing investment. In addition, artificial intelligence reduces emotion-driven irrational trading behavior, reduces the probability of large market fluctuations, and creates a stable market environment for long-term enterprise investment.

To sum up, artificial intelligence forms a three-dimensional collaborative mechanism by solving the dilemma of information trust at the micro level, correcting capital allocation deviation at the meso level, and smoothing economic cycle fluctuations at the macro level, promoting the flow of capital to efficient fields. At the same time, the application of artificial intelligence gives birth to new risks such as algorithmic convergence and technology concentration, but its core value lies in improving capital allocation efficiency, which cannot be ignored.

2.2. Heterogeneity: the non-inclusive characteristics of artificial intelligence dividends

The impact of artificial intelligence on financial markets has significant heterogeneity. Differences in enterprise micro characteristics, technology application forms and external institutional environments jointly lead to differentiated effects, which originate from the differentiated characteristics of financial friction intensity, technology implementation adaptation thresholds and external support conditions of different subjects.

2.2.1. Enterprise micro characteristics: positive correlation between friction intensity and impact effect

The impact of artificial intelligence on enterprise investment is positively correlated with the initial intensity of financial frictions. Wen et al. [7], based on a sample of Chinese A-share non-financial listed enterprises from 2015 to 2022, calculated that the investment improvement of non-state-owned enterprises is 1.4 times that of state-owned enterprises. The reason is that non-state-owned enterprises face more severe financing constraints and higher degree of financial frictions, and enterprises with weak internal control quality benefit more significantly. Artificial intelligence technology can forcibly improve enterprise information transparency and effectively alleviate principal-agent problems. The investment improvement effect of enterprises with high cost stickiness is twice that of enterprises with low cost stickiness [7]. The core reason is that artificial intelligence can reduce enterprise operating rigidity and reduce the probability of credit decision misjudgment. It is worth noting that enterprises with strong asset mortgage capacity have more prominent dividend release effects. The current artificial intelligence risk control system still relies on structured financial data and physical asset data as the core support, forming a complementary effect of mortgage assets. Asset-light enterprises are difficult to fully enjoy technological dividends due to insufficient data endowment and fall into financing difficulties.

2.2.2. Technology application dimension: technology types and scenarios determine the boundary of impact

There are significant differences in the effects of different technical forms and application scenarios of artificial intelligence. The consultation report Artificial Intelligence in Capital Markets: Use

Cases, Risks and Challenges released by the International Organization of Securities Commissions (IOSCO) [8] in 2025 shows that traditional machine learning technology is mature and stable in application scenarios such as credit scoring and anti-fraud. Therefore, generative artificial intelligence technology currently mainly focuses on the internal operation of enterprises, and prudence is still required for the application of high-risk financial scenarios. From the perspective of application scenarios, information governance applications (financial report analysis, risk profiling) perform better than capital allocation applications (intelligent credit, intelligent investment advisory), and internal operation applications (office automation) perform weaker than the first two categories. From the perspective of application depth, customized models built with enterprise internal data have significantly better application effects than third-party general models, but customized applications are characterized by high investment, which further widens the digital gap between large enterprises and small, medium and micro enterprises.

2.2.3. Institutional and regulatory environment: external support determines the degree of dividend release

The release degree of artificial intelligence dividends is highly dependent on the external institutional environment. Based on the research results of Wen et al. [7], the FSB's 2024 [9] report The Financial Stability Implications of Artificial Intelligence and IOSCO [8], it is concluded that China's artificial intelligence innovation and development pilot zones have realized the synergy of technology empowerment and policy by improving infrastructure, introducing preferential policies and promoting data sharing. The release effect of artificial intelligence dividends for enterprises in the pilot zones is significantly better than that of enterprises in non-pilot zones. From the perspective of financing market structure, in markets dominated by indirect financing, artificial intelligence mainly optimizes the operational efficiency of the credit market, while in markets with a higher proportion of direct financing, artificial intelligence plays a greater role in improving the pricing efficiency of the capital market. Globally, regulatory models also show significant differences. The European Union implements a strict regulatory model, which raises the compliance costs of financial institutions and inhibits technological innovation vitality. The United States adopts a loose regulatory model, which is prone to frequent risk incidents. China implements a gradual regulatory model of pilot zones first, which effectively balances the goals of technological innovation and risk prevention and control.

To sum up, through the three-dimensional collaborative system of micro-level reconstruction of information trust – meso-level correction of capital allocation – macro-level smoothing of cyclical fluctuations, artificial intelligence fundamentally eliminates financial frictions restricting enterprise investment and promotes the improvement of capital allocation efficiency. However, its dividends present non-inclusive characteristics, with limited benefits for asset-light enterprises and small and medium-sized institutions, and technology types, application depth and institutional environment further aggravate the differentiation of impacts.

3. Systematic optimization and amplification effects of artificial intelligence on risks in financial markets

The impact of artificial intelligence on financial risks is dual. On the one hand, it reconstructs the financial risk management system from four dimensions of efficiency, paradigm, resources and resilience, realizing the improvement of the whole-process efficiency of risk control. On the other hand, due to the superposition of technical characteristics and the inherent vulnerability of the

financial system, it amplifies systemic risks from the dimensions of market operation, cybersecurity and cross-market transmission. The core contradiction is the imbalance between the speed of technology application and institutional adaptability.

3.1. Systematic optimization of artificial intelligence on financial market risks

Artificial intelligence does not simply replace the traditional risk management model, but realizes the innovation of risk management paradigm through technology empowerment, and becomes the core support for financial institutions to cope with complex risks. Its optimization effect is reflected in four dimensions.

3.1.1. Leap in whole-process risk control efficiency

Artificial intelligence covers the whole life cycle of risk identification, risk assessment, risk monitoring and risk disposal, breaking through the bottleneck of traditional manual efficiency and accuracy. In the front-end risk identification link, machine learning technology can process massive unstructured data and accurately capture hidden risk signals that are difficult to identify by traditional methods, compressing processes such as anti-money laundering and customer identity verification from days to minutes. In the middle-end risk assessment link, artificial intelligence realizes the standardization of risk rating through probabilistic modeling, avoiding manual subjective deviations. In the back-end risk disposal link, automatic control and real-time alarm greatly shorten the risk response time. According to the survey data in the report AI is revolutionizing risk management by Klynveld Peat Marwick Goerdeler (KPMG) [10], 98% of financial institutions have significantly improved their risk identification, monitoring and mitigation systems through artificial intelligence and advanced analysis technologies.

3.1.2. Innovation of risk perception paradigm and forward-looking early warning

Traditional risk management relies on historical data and point-in-time assessment, showing the characteristics of passive defense. Artificial intelligence realizes a fundamental innovation in the risk perception paradigm through real-time data flow analysis and predictive modeling: on the one hand, it monitors market fluctuations, credit conditions and trading behaviors in real time to identify early signals of fraud and default risks in advance; on the other hand, generative artificial intelligence can simulate extreme market scenarios, carry out stress tests and scenario planning, enhance the ability of financial institutions to defend against tail risks, and promote risk management from post-event remedy to pre-event prevention.

3.1.3. Inclusive risk management resources and structural optimization

Artificial intelligence lowers the application threshold of advanced risk analysis technology, enabling small and medium-sized financial institutions to obtain risk management capabilities originally exclusive to large institutions, narrowing the industry gap in risk governance and improving the overall risk resilience of the financial market. At the same time, artificial intelligence frees risk management personnel from repetitive mechanical work such as data sorting and report generation, enabling them to focus on high-value work such as complex risk research and judgment and strategic decision-making, significantly optimizing the efficiency of human resource allocation.

3.1.4. Human-machine collaboration builds a resilient risk defense system

Yazdi et al. [11], based on a comparative study of ChatGPT-4 and industry experts, showed that artificial intelligence has significant advantages in data processing scale, response speed and standardization degree (AI completes risk assessment in only a few minutes, while human experts need at least 8 hours), but has inherent limitations in complex situation understanding, ethical judgment and disposal of unexpected black swan events. The study shows that the optimal risk management model is human-machine collaboration. Artificial intelligence is responsible for standardized work such as data mining, anomaly detection and preliminary early warning, while human experts control key decisions, calibrate model deviations and deal with unconventional risks, forming a risk governance closed loop that complements technical efficiency and human wisdom.

3.2. Risk amplification effect of artificial intelligence on financial markets

The superposition of artificial intelligence technical characteristics and the inherent vulnerability of the financial system amplifies financial risks and becomes a new hidden danger to global financial stability.

3.2.1. Market operation risk: algorithmic homogenization amplifies procyclicality

The convergence of artificial intelligence trading algorithms and investment strategies amplifies market procyclicality: the IMF [6] study pointed out that most financial institutions build strategies based on similar open-source models and training data, which improves liquidity in normal market environments, but triggers collective selling behavior during market pressure periods, leading to liquidity exhaustion. The global market volatility caused by the unwinding of yen carry trades in August 2024 confirmed the amplification effect of collective unwinding of artificial intelligence algorithms. At the same time, artificial intelligence models have insufficient adaptability to extreme scenarios, exacerbating market panic and price distortion.

3.2.2. Cybersecurity and operational risks: technology upgrading amplifies attack risks

Artificial intelligence reshapes the pattern of cyber offense and defense, and the improvement speed of attackers' capabilities is significantly faster than that of defenders, exacerbating the vulnerability of financial infrastructure: Adrian et al. [5] pointed out that artificial intelligence lowers the threshold of cyberattacks and improves attack efficiency, and can automatically generate malicious code and phishing tools. In 2024, a multinational company in Hong Kong, China was defrauded by artificial intelligence deepfake technology, losing 25 million US dollars, which confirms the new type of cyber fraud risk. At the same time, financial institutions have increased dependence on a small number of third-party technology service providers, and the failure or attack of a single service provider is likely to trigger systemic operational risks.

3.2.3. Risk transmission and regulatory risks: intensified cross-market linkage and highlighted regulatory blind spots

Artificial intelligence breaks market boundaries and accelerates cross-market risk transmission: the FSB [12] study pointed out that artificial intelligence drives cross-asset arbitrage and global allocation strategies, enabling local risks to spread rapidly to global markets. Non-Bank Financial Institutions (NBFIs) have become the main subjects of high-risk artificial intelligence applications.

Their characteristics of loose supervision and insufficient information disclosure form regulatory blind spots, leading to hidden accumulation and sudden outbreak of risks, which increases the difficulty of systemic risk disposal.

4. research Conclusions and prospects

Based on the research results of institutions such as the IMF, FSB and KPMG, this paper systematically analyzes the dual impacts of artificial intelligence on financial markets. The core finding is that artificial intelligence fundamentally eliminates financial frictions restricting enterprise investment and significantly improves capital allocation efficiency through the three-dimensional collaborative system of "micro-level reconstruction of information trust – meso-level correction of capital allocation – macro-level smoothing of cyclical fluctuations": at the micro level, it breaks bank-enterprise information barriers based on full-volume data analysis; at the meso level, it corrects traditional capital misallocation through data-driven credit evaluation; at the macro level, it smooths economic cycle fluctuations with the help of counter-cyclical adjustment, and ultimately promotes the flow of capital to efficient fields.

At the same time, artificial intelligence dividends show obvious non-inclusive and heterogeneous characteristics. Non-state-owned enterprises, enterprises with weak internal control, enterprises with strong asset mortgage capacity and traditional machine learning application scenarios benefit more significantly. Pilot zones, indirect financing markets and gradual regulatory environments are also more suitable for the development of artificial intelligence technology, while asset-light enterprises fall into the digital divide due to the short board of data endowment and become the main group missing technological dividends.

In addition, artificial intelligence plays a dual role in financial risks: on the one hand, it realizes the leap of whole-process risk control efficiency, promotes the transformation of risk management from passive response to active prevention, and helps build a human-machine collaborative defense system; on the other hand, it also amplifies systemic risks due to algorithmic homogenization, upgraded cyberattacks and accelerated cross-market transmission. The imbalance between the speed of technology application and institutional adaptability is the core cause of this problem.

To sum up, technology itself has no advantages or disadvantages. The key to unlocking the value of artificial intelligence lies in the dynamic adaptation between technology application and regulatory systems. Only by building a regulatory system matching the development of artificial intelligence can we maximize technological dividends while holding the bottom line of financial security.

Although this study clarifies the core logic of artificial intelligence affecting financial markets, there are still several limitations: the depth of heterogeneity analysis needs to be expanded. Although it reveals the digital divide dilemma faced by asset-light enterprises, it does not deeply explore the implementable solutions at the technical and institutional levels. The long-term impact of generative artificial intelligence in high-risk scenarios is insufficiently concerned, and there is a lack of support from long-term dynamic data. The international regulatory comparison is relatively macro, and targeted adaptive suggestions are not put forward in combination with the structural differences of national financial systems.

In view of the above deficiencies, future research can further focus on the data endowment short board of asset-light enterprises, and build an intelligent risk control model adapted to unstructured data to bridge the digital divide; continuously track the implementation and application process of generative artificial intelligence, build a dynamic risk early warning system and quantify its cross-market transmission mechanism; combine the institutional characteristics of different countries'

financial systems to build a global regulatory framework that unifies differentiation and synergy; at the same time, quantify the intensity and threshold of artificial intelligence cross-market risk transmission to provide accurate quantitative support for macro-prudential supervision, so as to further improve the theoretical system of artificial intelligence financial applications and provide more solid academic support for realizing the dynamic balance of financial innovation and security.

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