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The Impact of Generative AI Development on Unemployment in the Financial Industry in China and the United States

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Abstract

The rapid development of generative artificial intelligence is triggering far-reaching structural changes in the labor market in the global financial industry. This paper aims to study the differentiated impact of generative AI on the unemployment rate in the financial industry in China and the United States and its response strategies. Generative AI, with its creative content generation, complex decision simulations, and unstructured data processing capabilities, is reshaping the employment landscape in the knowledge-intensive industry of finance. China and the United States have shown completely different influence paths due to different financial structures, technological foundations, and policy orientations: China's bank-led financial system is facing a large number of low- and middle-skilled job transformation pressures, but through strong government intervention and "stable employment" policies, the impact is buffered; The United States is market-led, with prominent risk of replacing mid-range analytical positions and relying on market regulation mechanisms to cope with technological shocks. This study not only reveals the alternative mechanism and creative effect of generative AI on financial employment, but also proposes a differentiated strategic response framework for the two countries, providing an important reference for the global financial industry to achieve a smooth transformation in technological change.

Keywords

Generative AI; China-US Comparison; Finance; Unemployment.

1. Introduction

The in-depth application of generative AI in the financial field is triggering structural changes in the global labor market, and systematic research on its impact on the unemployment rate in the financial industry in China and the United States has far-reaching theoretical value and practical significance.

From a theoretical perspective, this study fills the core gap in the relationship between technological shocks and the dynamic response of the labor market. While the traditional theory of "technical unemployment" focuses on the substitution effect of mechanization on manufacturing, the unique attributes of generative AI – creative content generation, complex decision simulation, and unstructured data processing capabilities – are disrupting the employment structure of knowledge-intensive industries. As a typical knowledge service industry, the financial industry relies heavily on information processing and professional judgment, so it has become a key sample for observing the employment effect of generative AI. The construction of new indicators such as the "human-machine synergy coefficient" to quantify the substitution elasticity of AI for financial positions can enrich the interdisciplinary theoretical framework of technical economics and labor economics.

From a practical point of view, China's financial industry has more than 8 million employees, of which more than 40% are bank tellers and basic credit auditors, facing high automation risks;

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The AI replacement rate for U.S. investment banking analysts, insurance adjusters and other positions is expected to reach 30% between 2025 and 2030. McKinsey research shows that generative AI could create $1.2 trillion in economic value per year in the global financial industry, but it will also lead to a job restructuring rate of 25%-33%. [1] The lack of precise labor force retraining and job transfer policies may lead to social problems such as structural unemployment, widening talent gaps, and increasing social inequality. The study aims to analyze the impact of generative AI development on the unemployment situation in the financial industry in China and the United States, and provide a decision-making basis for solving the "urgent transformation challenges" faced by the financial industry in China and the United States.

2. Research Background

In recent years, the rapid development of artificial intelligence is profoundly reshaping the operation model and employment structure of the global financial industry. Large language models represented by ChatGPT, Gemini, Claude, etc., as well as the breakthrough progress of Diffusion Models in text generation, data analysis, code writing, decision simulation, etc., have made the financial industry, a knowledge-intensive industry that highly relies on information processing and professional judgment, become the frontier field of generative AI implementation.

The financial industry has always been an important testing ground for technological innovation. From the early electronic trading system to big data risk control, and now to today's generative AI, technology iteration continues to drive the efficiency of the industry. ICBC launched the "Digital Staff" program in 2023, deploying 10,000 Al smart tellers across the country, and these Al systems can handle 80% of standard counter business, resulting in the loss of 12,000 grassroots tellers that year, but at the same time creating 2,000 new Al trainer and system maintenance positions. Taking Goldman Sachs Group as an example, the investment bank deployed its self-developed MarcusGPT system in 2024, which can automatically generate investment research reports, resulting in the layoff of 300 junior analysts at its New York headquarters, accounting for 40% of the total number of positions. It is not difficult to find that generative AI has unique advantages in the financial field - first, it can automate knowledge-based tasks, generate research reports, contracts, compliance documents, and perform tasks traditionally performed by humans such as financial analysis and risk assessment; Secondly, the use of generative AI can enhance decision-making capabilities: by analyzing massive amounts of unstructured data such as news and financial reports, it provides auxiliary decision-making support such as market forecasts and investment advice; Finally, the introduction of AI can optimize customer interactions: applications such as Robo-Advisor and AI customer service can reduce service costs and improve financial inclusion.

As a labor-intensive industry, the employment structure of the financial industry is experiencing AI-driven "creative destruction": about 25%-33% of jobs in the global financial industry may be automated by AI, including basic analysts, credit examiners, insurance claims specialists, etc. [2] However, while replacing positions, AI has given rise to new occupations, such as AI financial engineers, compliance prompt engineers, human-computer collaboration consultants, etc., but the skill requirements for these positions have increased significantly. Traditional financial practitioners such as bank tellers and accountants may face the risk of unemployment if they cannot quickly master AI collaboration skills, while high-skilled talents such as data scientists and AI strategists are in short supply. [3]

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3. Comparison between China and the United States

3.1. Differences in Financial Structure

From the perspective of system characteristics, China is bank-led: large state-owned banks and dense grassroots outlets are the core, similar to tellers and credit operators, with a huge base of low- and middle-skilled positions. The United States is market-led: the capital market is highly developed, with investment banks, funds, insurance and other institutions as the main body, such as junior analysts, insurance underwriters and mid-level analysis positions account for a high proportion. This difference is confirmed in specific cases: Goldman Sachs' analyst layoffs mainly affect middle-income groups with an annual salary of 8-150,000 US dollars, while the adjustment of tellers at Cloth Industrial Bank affects grassroots employees with an annual salary of 4-80,000 yuan.

In terms of technology application priorities, China focuses on cost reduction and efficiency increase and inclusive finance (such as intelligent risk control services for small, medium and micro enterprises, and the popularization of mobile payment). The United States focuses on complex financial instrument pricing, high-frequency trading, regulatory technology (RegTech) and investment decision support.

China is also in a "pyramid shape" - there are a large number of low-level operating positions, and the absolute number of people affected by automation may be higher, but the internal transfer buffer mechanism of state-owned enterprises and large institutions is strong. The United States presents a "spindle type" - a large number of intermediate-skilled analysis, consulting, and accounting positions have become the "hardest hit areas" of AI replacement, and the proportion of job replacement may be higher.

3.2. Comparison of Policy Orientation

When China and the United States respond to the impact of generative AI on employment in the financial industry, their policy orientation shows fundamental differences in philosophy.

China's policy framework emphasizes both development and stability, actively encouraging technological innovation while placing employment stability and social risk prevention and control at the core. The government has issued documents such as the "Financial Technology Development Plan" to actively guide and directly intervene through top-level design, including the establishment of industrial transformation funds, the provision of inclusive retraining subsidies, and the special focus on giving full play to the social responsibility of state-owned enterprises to "stabilize employment", so as to build a social security buffer network. Its governance logic is embodied in "overall planning", aiming to balance efficiency and stability in innovative tools such as regulatory sandboxes through the regulatory framework of "macroprudential + micro behavior".

In contrast, the U.S. policy philosophy is centered on market-driven and technological leadership, focusing on "loosening" technology applications through deregulation to maintain its global AI leadership. The role of the government is more auxiliary, mainly through market-oriented tools such as tax incentives and extension of unemployment insurance periods to regulate the labor market, relying on the market's own liquidity and elasticity to digest technological shocks, behind which is a typical "technology first" logic.

3.3. Foundation and Application of Artificial Intelligence Technology

In terms of technology ecology and application paths, China and the United States are at different levels and have their own focuses.

The United States has a full-stack leading edge in the field of artificial intelligence, from the underlying high-end training chips (such as NVIDIA GPUs), core algorithm frameworks (such as PyTorch), to the top-level general-purpose large models (such as GPT-4, Claude), building

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strong technical barriers and a global software ecosystem. This advantage allows its financial AI applications to focus on the automation of knowledge-based work, with an alternative focus on high-value-added white-collar positions such as investment research, complex report generation, compliance review, and quantitative trading strategy development.

In contrast, China's advantages are reflected in the innovation and large-scale implementation of application scenarios, and it has led the world in mobile payment, online credit and other fields. However, it is still in a state of "chasing" on the basis of the underlying framework and computing power, which leads to the development of its large financial model relying heavily on massive localized data annotation for training and fine-tuning. Therefore, the current technology application focuses more on the automation of business processes, aiming to improve efficiency and reduce labor costs, and the focus is on regular and repetitive operation processes such as counter business, data entry, and basic credit review.

3.4. The Degree of Impact on Employment

The impact of generative AI on the financial job market in the two countries differ significantly in terms of manifestation and core challenges.

In the short term, China's explicit unemployment rate has been kept low by strong policy interventions, especially the responsibility of state-owned enterprises to "stabilize jobs" and internal transfer mechanisms to avoid large-scale layoffs. However, there is a huge hidden pressure behind this, which is manifested in the dilemma of a large number of employees facing the dilemma of "job transfer and skill reduction", the value of jobs is hollowed out, and the mismatch of human resources is prominent. The long-term challenge is to complete the systemic transformation of millions of low-skilled financial practitioners.

The United States shows typical market adjustment characteristics, frictional unemployment is more obvious and rapid, and companies are decisively laying off employees based on the principle of efficiency (such as the Goldman Sachs report shows that the unemployment rate of young people in the technology industry has increased significantly). The long-term risk lies in the hollowing out of middle-income jobs, that is, the "enhanced substitution" effect of AI (1 person + AI completes 3 people's work) may lead to a permanent reduction in traditional middle-class jobs such as analysts and accountants, while the supply of emerging high-skilled jobs cannot keep up with demand, exacerbating the skills gap and income inequality. The social concerns of the two countries are also different: China is more wary of the social stability risks posed by mass unemployment, while the United States is more concerned about the increased social division caused by technological unemployment.

3.5. Common Challenges

Despite their different development paths, China and the United States face many common challenges in dealing with the financial employment changes brought about by generative AI. Skill mismatch is the core problem, and the traditional financial curriculum system is difficult to quickly adapt to the requirements of the AI era, and practitioners need to master new skills such as prompt engineering and AI ethical assessment. The dilemma of ethical supervision is becoming increasingly prominent, and issues such as algorithmic bias, data privacy, and liability determination need to be solved through cross-border collaboration. In addition, the trend of hollowing out middle-income jobs has emerged in both countries, and traditional white-collar positions such as analysts and risk control specialists have been severely impacted. Most importantly, both countries need to find a balance between technological efficiency and social stability, unleashing the productivity potential of AI while guarding against systemic risks caused by mass unemployment, which requires governments, enterprises and educational institutions to form a synergistic governance force.

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4. Sino-US Strategy

In the face of the impact of generative AI on financial employment, China's response strategy is rooted in its institutional advantages and social governance traditions, emphasizing the priority of ensuring employment stability and social harmony in technological change, and building a resilient transformation framework with "seeking progress while maintaining stability". The core idea is to build a framework that can buffer technological shocks and achieve a smooth transition of the workforce through strong government guidance, systematic industrial policies and inclusive skills reshaping. Specifically, the government will take the lead in setting up a "Special Fund for AI Transformation in the Financial Industry" to provide direct subsidies for the retraining of employees in financial institutions, and encourage large state-owned banks and securities firms in particular to assume the social responsibility of "stabilizing employment" and digest redundant manpower through internal transfers rather than direct layoffs. At the same time, the policy will promote the in-depth practice of "integration of industry and education", and the directive requires universities and leading enterprises (such as Ant Group and ICBC) to jointly develop targeted micro-certificate courses and practical training programs, focusing on emerging skills such as prompt engineering, AI model ethical auditing, and human-computer collaborative decision-making, so as to ensure that traditional financial practitioners can obtain a feasible transformation path. At the regulatory level, China can adopt the principle of "inclusive and prudent" governance, encourage AI application innovation in the sandbox pilot, establish an AI employment impact assessment system, initiate early warning for enterprises with a replacement rate exceeding the threshold, and mandate the submission of employee placement plans, so as to balance efficiency and fairness, and finally achieve space for time to ensure the stability of the overall job market in technological iteration. [4,5]

The U.S. response strategy fully reflects its market-driven, technologically leading and highly liquid economic characteristics, and the core is to resolve the unemployment shock by strengthening the adaptability of the labor market itself, encouraging independent innovation and improving the social safety net. The policy will focus on designing efficient tax incentives and subsidies, such as providing "job transition tax credits" for financial institutions, where companies can receive high tax breaks for every employee successfully trained and placed in AI collaboration positions, such as AI compliance specialists, financial data strategists, etc., thereby internalizing externality costs. At the same time, it will vigorously activate the potential of community colleges and vocational training systems, promote cooperation with Silicon Valley technology companies to develop standardized and modular agile courses, and help unemployment analysts, claims adjusters and other medium-skilled groups quickly master new skills through large-scale delivery through online platforms. In response to the pain of the market adjustment period, the United States will reform the unemployment insurance system and explore "wage insurance" programs to provide transitional income compensation to workers who have lost their jobs and undergone retraining due to AI to make up for the wage gap during their transition. At the strategic level, the government will increase investment in "Human-Augmented AI" research through the National Science Foundation to ensure that technology evolves in the direction of enhancing rather than simply replacing human capabilities, so as to maintain its core competitiveness in the global fintech field in the long term and rely on market vitality to spawn new employment forms.

5. Epilogue

The impact of generative AI on the financial industry is by no means a simple technological substitution, but a profound epitome of the transformation of old and new paradigms in the process of human civilization. This change forces us to re-examine the value of labor, the nature

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of education, and the ultimate goal of economic development - not to pursue endless efficiency improvements, but to build a new ecology of symbiosis between technology and humanity.

Looking forward to the future, the financial industry will take the lead in entering a new era of "human-machine symbiosis". Artificial intelligence will undertake regular, computational and repetitive labor, while humans will focus on creative, ethical and emotional value creation. This division of labor is not a confrontational substitution, but a collaborative evolution: AI becomes an extension of human cognition, not a substitute; Humans become calibrators of AI value, not competitors. The practice of China and the United States enlightens the world: there is no single solution to technology governance, but "people-oriented" should be the common bottom line - China's policy intervention shows the role of social stabilizer in transition, and the market vitality of the United States demonstrates the possibility of innovation and adaptation, both of which point to a core consensus: the ultimate mission of technology is to liberate, not restrict human potential.

The future competition will be ecosystem competition: not only for algorithmic computing power, but also for institutional flexibility, educational innovation and social inclusion. As the lifeblood of the modern economy, finance's employment reform will radiate to the whole society - if it can successfully build a new paradigm of human-machine collaboration, it will provide a key model for the reshaping of the education system, the upgrading of social security and the cooperation of global governance.

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