Research on the Impact and Mechanism of Green Finance on Urban Economic Resilience

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Abstract: As a pivotal instrument for driving green economic transformation, green finance holds profound significance in enhancing urban economic resilience. Amid escalating global economic uncertainties and increasingly complex challenges confronting urban economic systems, there is an urgent need to explore new development pathways. This paper examines the intrinsic connection between green finance and urban economic resilience, systematically analyzing its impact on urban economic resistance, recovery capacity, and transformation potential. It further explores three key mechanisms: industrial structure optimization, technology innovation-driven development, and improved resource allocation efficiency. The study aims to provide theoretical references and practical insights for achieving high-quality urban economic development.

Keywords: green finance; urban economic resilience; mechanism of action; high-quality development

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Introduction

Amid the dual pressures of global climate change and economic transformation, green finance has emerged as a pivotal force in advancing sustainable development. As the primary hubs of economic activity, cities 'economic resilience directly impacts regional and national stability. Economic resilience refers to a city's ability to withstand external shocks, recover, and adapt through transformation. In recent years, compounded by the COVID-19 pandemic, geopolitical conflicts, and energy crises, urban economies have faced unprecedented challenges. Against this backdrop, enhancing urban economic resilience has become a focal point for both academia and policymakers. By directing capital toward green and low-carbon sectors, optimizing resource allocation, and driving industrial upgrading, green finance injects new momentum into urban economic development.

1 Theoretical Basis and Research Significance of Green Finance and Urban Economic Resilience

1.1 Definition and Development of Green Finance

Green finance refers to economic activities aimed at promoting environmental improvement, addressing climate change, and achieving efficient resource utilization. It encompasses various financial instruments such as green credit, green bonds, green insurance, and green funds. The core principle lies in integrating environmental benefits into financial decision-making systems, guiding social capital to invest in environmentally friendly industries and projects. Historically, green finance has evolved from conceptual emergence to institutional development and comprehensive advancement. Currently, China has established a relatively complete green finance policy framework, with green credit expanding in scale, green bond markets thriving, and green insurance products diversifying. Governments at all levels have introduced a series of policy measures to support green finance development, financial institutions continuously innovate green financial products and service models, and public interest in green investments continues to grow. However, challenges such as inconsistent standards, inadequate information disclosure, and underdeveloped incentive mechanisms remain, requiring further practical innovation and refinement to better serve the green economic transition.

1.2 The Concept and Measurement System of Urban Economic Resilience

Urban economic resilience originates from the ecological concept of resilience, referring to the comprehensive capability of urban economic systems to effectively withstand risks, rapidly return to normalcy, and achieve adaptive transformation under external shocks. In terms of connotation, urban economic resilience encompasses three levels: resistance—the ability of urban economic systems to withstand external shocks and maintain basic operational functions; recovery—the capacity of urban economic systems to return to normal development trajectories after shocks; and transformation—the capability of urban economic systems to achieve higher-level development through structural adjustments and innovative pathways. The academic community generally agrees that comprehensive evaluation indicators should be established from perspectives such as economic diversity, industrial structure, innovation capacity, human capital, infrastructure, and social networks. High-resilience urban economies typically exhibit characteristics such as diversified industrial structures, abundant innovation vitality, rich human resources, and substantial social capital. Urban economic resilience is not a static indicator but a dynamic developmental process that requires continuous adjustment and optimization in response to external environmental changes. A profound understanding of the connotation and measurement methods of urban economic resilience serves as the theoretical foundation for exploring the impact effects of green finance [1].

1.3 Theoretical Significance of Green Finance on Urban Economic Resilience

Research on the impact of green finance on urban economic resilience holds significant theoretical and practical value. Theoretically, integrating green finance into urban economic resilience studies helps expand the scope of economic resilience research and deepen understanding of the relationship between finance and regional economic development. As a form of financial innovation, green finance exhibits unique pathways and mechanisms in influencing urban economies. In-depth exploration of these dynamics aids in uncovering the intrinsic principles of how finance supports high-quality economic development. Currently, China is undergoing a critical economic transition, with urban economies facing challenges such as increasingly stringent resource and environmental constraints and weakening traditional growth drivers. By optimizing resource allocation, driving technological innovation, and guiding industrial upgrading, green finance can effectively enhance urban economies 'endogenous development momentum and external risk resilience. Clarifying the connection between green finance and urban economic resilience enables policymakers to formulate sound green finance policies and implement targeted measures to improve urban economic resilience. Therefore, conducting research on green finance's impact on urban economic resilience serves both theoretical innovation and practical development needs [2].

2 Impact Analysis of Green Finance on Urban Economic Resilience

2.1 Impact of Green Finance on Urban Economic Resilience

Green finance enhances urban economic resilience through multiple channels. By directing capital toward strategic emerging industries like clean energy and energy conservation, it promotes industrial diversification, reduces dependence on single industries, and strengthens the economy's ability to withstand sectoral shocks. Industrial diversification acts as a risk buffer for urban economies—when one sector faces challenges, others can stabilize the system. Green finance supports enterprises in adopting green technologies and cleaner production methods, improving resource efficiency, lowering operational costs, and boosting market competitiveness and risk resilience. As the micro-foundation of urban economies, enhanced corporate resilience directly translates to stronger overall economic resilience. It drives green upgrades in urban infrastructure, optimizes energy supply security, and mitigates economic impacts from price fluctuations or supply disruptions. Furthermore, green finance fosters eco-friendly urban branding, attracts quality resources, creates a virtuous cycle, and continuously strengthens cities' ability to withstand external shocks [3].

2.2 Impact of Green Finance on Urban Economic Resilience

Green finance plays a vital role in enhancing urban economic resilience. The ability of a city's economy to swiftly resume normal operations after external shocks is crucial. By establishing robust risk-sharing mechanisms and improving resource redistribution efficiency, green finance provides strong support for rapid economic recovery. On the other hand, risk management tools like green insurance can mitigate environmental and climate risks. When disasters strike, insurance payouts enable affected businesses and residents to quickly resume production and daily life, shortening the recovery timeline for the economic system. Furthermore, the operation of green financial markets improves capital allocation efficiency, directing funds more rapidly to sectors and segments in urgent need of recovery after shocks. During economic recovery, green credit provides working capital support for businesses to resume operations, while green bonds offer financing channels for infrastructure restoration. The sustainable development philosophy promoted by green finance helps guide urban economies to avoid repeating past mistakes during recovery, achieving higher-quality recovery. Additionally, green finance facilitates digital and intelligent transformation, enhancing urban economic monitoring and early warning systems to promptly detect risk signals, thereby creating conditions for swift response and recovery [4].

2.3 Impact of Green Finance on Urban Economic Transformation Capacity

Green finance plays a profound role in shaping urban economic transformation capabilities. Transformation capability, as an advanced form of urban economic resilience, refers to a city's ability to proactively adapt and achieve leapfrog development. Green finance serves as a crucial force in urban economic upgrading by guiding development directions, stimulating innovation, and reshaping competitive advantages. Firstly, it establishes "green standards" for capital allocation, compelling high-pollution and energy-intensive enterprises to accelerate transformation, steering urban economies toward green and low-carbon development. This strategic realignment breaks urban economic path dependence and opens new development horizons. Secondly, green finance actively supports green technology R&D and application, providing technological underpinnings for urban economic transformation. Innovations in new energy, advanced materials, and environmental protection equipment typically create new industrial growth points, driving qualitative leaps in urban economies. Thirdly, green industries supported by green finance possess high added value and strong growth momentum, helping cities secure more advantageous positions in global industrial chains and enhance international competitiveness. Additionally, green finance promotes innovations in urban governance concepts and models, fostering a favorable institutional environment for continuous urban economic upgrading [5].

3 The Mechanism of Green Finance in Enhancing Urban Economic Resilience

3.1 Mechanism for Optimizing and Upgrading Industrial Structure

Industrial structure optimization and upgrading serve as the primary pathway for green finance to enhance urban economic resilience. Through differentiated credit policies and investment guidance, production factors are redirected from high-pollution, energy-intensive industries to green and low-carbon sectors, driving industrial transformation toward lighter and greener development. On one hand, green finance imposes stringent credit restrictions on "two-highs-one-surplus" industries (high-pollution, high-energy-consumption, and overcapacity sectors). By raising interest rates, shortening loan terms, and increasing collateral requirements, it elevates financing costs and entry barriers for these industries, compelling them to accelerate technological upgrades or orderly exit, thereby phasing out outdated production capacities. On the other hand, green finance offers preferential financing terms to clean energy, energy conservation, environmental protection, and ecological restoration industries. Measures like reduced interest rates, extended repayment periods, and simplified approval processes attract more capital inflows, fostering rapid growth in green industries. Industrial optimization generates multiple resilience effects: diversified industries reduce urban economies' dependence on specific sectors, allowing other industries to buffer and compensate when a particular industry faces shocks. The development of green industries reduces environmental costs and resource constraints, while high-tech industries enhance urban economic innovation capabilities and competitive advantages, making urban economies more adaptable to market changes. Industrial upgrading also drives employment restructuring, facilitating labor migration from traditional to emerging industries and cultivating specialized talent, thereby providing robust human resource support for sustainable urban economic development.

3.2 Mechanism of Technology Innovation Drive

Technological innovation serves as the fundamental pathway through which green finance enhances urban economic resilience. Innovation capacity is widely recognized as a critical factor in economic system resilience. Cities with robust innovation capabilities can better adapt to and mitigate crises during development processes when facing sudden environmental changes, thereby creating new economic growth opportunities. Green finance actively promotes technological innovation in urban economies through multiple dimensions. It provides substantial funding support for green technology R&D. Given that green technology development involves long cycles, high risks, and significant investments—often requiring years or even longer to achieve breakthroughs—solo reliance on corporate funds is insufficient to sustain long-term R&D investments. Financial instruments like green credit and green funds effectively bridge this funding gap, reducing corporate financing constraints for R&D and enabling companies to focus on core technology breakthroughs. The expansion of green finance markets accelerates the industrial application of green technologies. Venture capital and equity financing provide essential funding for green innovation enterprises, helping them overcome the "valley of death" between laboratory research and commercial production, transforming lab-developed scientific achievements into market-competitive products and services. Green financial institutions play a pivotal role in technology evaluation and value discovery during investment processes. Through professional due diligence and project screening, they help high-quality green technologies stand out, directing innovative resources toward high-efficiency sectors while avoiding resource waste on inefficient projects. The industry-university-research collaboration platform, supported by green finance, enables universities, research institutes, and enterprises to collaborate, facilitating knowledge spillover and technology diffusion, thereby significantly enhancing the overall innovation efficiency of urban economic systems. Driven by technological innovation, urban economies continuously give rise to new business models and operational paradigms, strengthening their developmental resilience.

3.3 Mechanism for Improving Resource Allocation Efficiency

Enhancing resource allocation efficiency serves as a key mechanism for green finance to strengthen urban economic resilience. Optimal resource distribution maximizes the utilization efficiency of production factors, reduces resource idleness and waste, and boosts the economic system's ability to withstand shocks and recover. Through price signals and information transmission, green finance improves the allocation of social resources across sectors, directing resources to the most efficient areas. By internalizing environmental externalities through carbon pricing and environmental tax incentives, green finance ensures capital pricing accurately reflects the social costs and benefits of projects. This guides investments toward sustainable development opportunities, prevents resource misallocation and inefficient investments, and reduces environmentally harmful activities. Green finance also improves environmental disclosure systems, requiring companies to regularly disclose environmental performance data and carbon emission information. This reduces information asymmetry between investors and enterprises, enhancing market efficiency in resource allocation. Investors can better assess corporate environmental risks and green value, identifying truly promising companies with growth potential for more rational investment decisions. Green finance has developed financing tools and risk control mechanisms such as green bonds, green insurance, and carbon derivatives to meet the diverse financing needs and risk profiles of green projects, ensuring precise and effective capital allocation. Additionally, green finance breaks down barriers to cross-regional and cross-industry resource flows, enabling broader optimization of resource distribution. The improvement of resource allocation efficiency enables the city economy to obtain more output with less input, thus improving the overall efficiency and resilience of the economic system.

4 Epilogue

Green finance serves as a vital instrument for driving economic green transformation, playing an irreplaceable role in enhancing urban economic resilience. This study systematically analyzes the impact of green finance on urban economic resistance, recovery capacity, and transformation potential, identifying three key mechanisms: industrial structure optimization, technological innovation promotion, and improved resource allocation efficiency. The research demonstrates that green finance can effectively enhance urban economies 'risk resilience, rapid recovery capabilities, and adaptive transformation through capital flow guidance, innovation stimulation, and optimized resource allocation. Amid growing global economic uncertainties, governments at all levels should continuously improve green finance policy frameworks, innovate financial products and services, establish robust incentive and constraint mechanisms, and fully leverage green finance's positive role in strengthening urban economic resilience.

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