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The Impact of Digital Finance on the Resilience of Open City Economic Development

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Abstract

With the acceleration of digitization, digital finance has become a vital force in driving global economic development. Against this backdrop, this study explores the impact of digital finance on the resilience of open city economic development. The study finds that digital finance, by providing more convenient and efficient financial services, promotes economic innovation, advances the optimization of the economic structure, and enhances the resilience of urban economies against risks and recovery capacity. Meanwhile, digital finance also plays a positive role in promoting social inclusiveness, reducing poverty, and improving the quality of life. These findings have significant research implications for understanding how digital finance influences the resilience of urban economies.

Keywords

Digital Finance, Open City, Economic Innovation, Strategy

1. Introduction

In the 21st century, under the dual drive of globalization and digitization, we are experiencing an unprecedented technology and social revolution. Among these, digital finance, an essential component of this revolution, has become a key driver of global economic development (Zhou et al., 2020a). Particularly for the development of open city economies, the impact of digital finance is significant (Liu et al., 2021). Digital finance, a new financial model based on internet technologies and big data analysis, with its convenience and efficiency, is profoundly changing our lives and economic environment (Gomber et al., 2018).

Digital finance has been a hot topic of research in recent years. Numerous studies have explored its impacts on different aspects of the economy, such as financial inclusion (Demirgüç-Kunt et al., 2018; Mookerjee, 2020), innovation (Haddad & Hornuf, 2019; Philippon, 2020), and poverty reduction (Allen et al., 2020; Burgess & Pande, 2022). However, the literature on the impact of digital finance on the resilience of open city economies is still sparse. While some studies have indirectly touched upon this topic by examining the role of digital finance in urban areas, they have not specifically looked at the concept of "resilience" in open city economies. This leaves a research gap (Zhang & Chen, 2022), which this study aims to fill by comprehensively examining the impact of digital finance on the resilience of open city economies.

By providing more inclusive and flexible financial services, digital finance not only plays a significant role in promoting economic innovation and optimizing economic structure but also demonstrates strong competitiveness in enhancing the resilience of urban economies to risks (Gomber et al., 2018). Simultaneously, we see that digital finance has shown incomparable value at the social level. By expanding the coverage of financial services, it has promoted the enhancement of social inclusivity (Mookerjee, 2020), supported the development of impoverished areas and disadvantaged groups (Burgess & Pande, 2022), and significantly improved our quality of life with convenient financial services (Liu et al., 2021).

However, although the development prospects of digital finance are broad, its impact on the resilience of the open city economy needs further research (Zhang & Chen, 2022). The open city economy, as a complex system, requires our deep understanding and innovative thinking at multiple levels to enhance its resilience. Therefore, this study aims to explore in depth the impact of digital finance on the resilience of open city economies, reveal the mechanism and path of digital finance in promoting the resilience of open city economies through analysis.

The article is organized as follows: After introduction, Section 2 provides an overview of digital finance and the open urban economy. Section 3 discusses the concept and importance of urban economic resilience. Section 4 explores the impact of digital finance on the resilience of open urban economic development. The final section, Section 5, concludes the paper, providing policy suggestions and implications based on the findings of this study. We hope that through the in-depth exploration of this research, valuable practical suggestions can be provided for city decision-makers in dealing with the complex and changing economic environment and promoting the continuous and healthy development of the city and society.

2. Overview of Digital Finance and Open Urban Economy

2.1. Definition and Development of Digital Finance

Digital finance, as an emerging form of financial business, is a financial activity based on emerging technologies such as the internet, big data, and artificial intelligence. It breaks the geographical and time constraints of traditional financial businesses, providing the public with more convenient, efficient, and diversified financial services. The rise of digital finance signifies a new stage in the development of the financial industry and triggers profound socio-economic changes globally. Speaking of the definition of digital finance, it can be understood as a financial business activity based on digital technology, including but not limited to mobile payments, online banking, P2P lending, digital currency, fintech, etc. (Li & Ran, 2021). The core of digital finance is to digitalize financial services through technological means, allowing the provision and acceptance of financial services anytime, anywhere, significantly reducing the transaction costs of financial services and improving their efficiency and convenience. From the perspective of development history, the rise of digital finance began with the popularization of the internet and the rapid development of mobile communication technology. In the early 21st century, with the rise of e-commerce, digital payments began to gradually become a part of people's daily lives. Subsequently, with the popularization of smartphones and the rapid development of mobile internet, digital financial services such as mobile payments and online banking began to rise rapidly, and fintech companies also emerged. In this process, traditional financial institutions also began to actively embrace digitalization and carry out various online financial businesses. Now, digital finance has become an integral part of the global financial industry, playing an increasingly important role not only in developing countries but also in developed countries.

2.2. Characteristics of Open Urban Economy

The open urban economy, as the name suggests, refers to the urban economy that is open to the external environment and interacts extensively and deeply with the external environment, thereby promoting the development of the urban economy. This economic form has several prominent features.

Firstly, it is characterized by globalization. The open urban economy occupies an important position in the global economic network, attracting global capital, technology, and talent, and its products and services are also exported to the global market. Globalization allows the urban economy to fully utilize global resources, optimize resource allocation, and thus improve economic efficiency and competitiveness (Tian, Tan, & Jin, 2021).

Secondly, it is characterized by innovation. The open urban economy is deeply integrated into the global innovation network, greatly improving the city's economic innovation capabilities through deep exchanges and cooperation with global resources such as knowledge, technology, and talent. Innovation is an important driving force for the sustainable development of the open urban economy and a key factor in improving the competitiveness of the urban economy.

Thirdly, it is characterized by diversification. The development of an open urban economy requires attracting and including a variety of resources. This includes various types of enterprises, talents at all levels, various forms of capital, and various cultures and values. This diversification makes the urban economy more vibrant and makes the urban economy more inclusive and resilient.

Fourthly, it is characterized by interconnectivity. The development of an open urban economy cannot be separated from extensive contacts with the outside world. These contacts include economic exchanges, technology cooperation, cultural integration, and other forms. Through deep interaction with the outside world, the urban economy can continuously absorb new knowledge, technology, and resources, thus promoting the continuous development of the economy.

Fifthly, it is characterized by flexibility. The open urban economy can quickly adapt to and respond to changes in the external environment. Whether it is changes in the global economic situation or changes in technology and the market, the open urban economy can make quick adjustments through flexible strategies and mechanisms to maintain economic stability and development.

2.3. Relationship between Digital Finance and Open Urban Economy

The relationship between digital finance and the open urban economy is close and complex, and the interaction and influence between the two largely determine the prosperity and development of the urban economy. From a more specific perspective, we can explore this relationship through the following practical scenarios:

Firstly, the stimulating effect of digital finance on the open urban economy. For example, due to the existence of digital finance, small and micro enterprises and individual entrepreneurs can obtain various financial services such as financing, payment, and insurance more conveniently, thereby reducing the difficulty of entrepreneurship and operation and encouraging innovation and entrepreneurship activities. This is undoubtedly a strong drive for the open urban economy.

Secondly, digital finance helps the globalization of the urban economy. Digital finance allows capital to flow quickly globally, which enables the urban economy to better attract global capital and enables the city's products and services to enter the global market more conveniently. For example, cross-border e-commerce overcomes geographical distance and time difference under the support of digital finance, achieving global commodity transactions.

Thirdly, digital finance strengthens the interconnectivity of the urban economy. Through digital financial platforms, enterprises and individuals can conduct financial transactions and information exchanges more conveniently, which undoubtedly enhances the connection within the urban economy and between the urban economy and the outside world. Tools such as mobile payment applications and digital currencies provide a seamless exchange of goods, services, and information, fostering a more connected and cooperative urban economy.

Lastly, digital finance promotes the diversification of the urban economy. Digital finance provides a variety of financial products and services, which can meet the diverse financial needs of various entities in the urban economy, thereby promoting the diversification of economic activities. Moreover, digital finance itself is an emerging industry that brings new vitality to the urban economy.

3. Concept and Importance of Urban Economic Resilience

3.1. Definition of Urban Economic Resilience

Urban economic resilience is a multi-level, multi-dimensional concept. It pertains to how a city's economy maintains its functions when facing various shocks, how it adapts and responds to these shocks, and how it recovers and rebuilds after these shocks. In simple terms, urban economic resilience represents the ability of a city's economy to maintain stability, return to normal, and even achieve better development after suffering various internal and external shocks. In understanding this concept in depth, we need to pay attention to several key elements. First are the shocks, including various factors that may cause damage to the urban economy, such as natural disasters, economic crises, and technological changes. Second is response and adaptation, referring to how the urban economy mitigates the impact of shocks through various strategies and mechanisms to maintain economic stability. Third is recovery and reconstruction, referring to how the urban economy quickly returns to normal after experiencing shocks, and even utilises these shocks as opportunities to achieve economic transformation and upgrade.

The importance of urban economic resilience cannot be overlooked. It is a guarantee for the stable development of the urban economy. Only with resilience can the urban economy effectively deal with various shocks and maintain stability. Moreover, it is a driving force for the transformation and upgrade of the urban economy. Shocks often break the old equilibrium, creating new development opportunities. A resilient urban economy can take advantage of these opportunities to achieve economic transformation and upgrade. Finally, it is the basis for the long-term development of the urban economy. Only with resilience can the urban economy achieve sustainable and healthy development in a constantly changing environment. Therefore, urban economic resilience is an important research topic and a key indicator of urban economic development. We need to enhance the resilience of the urban economy through various means to ensure its stability, transformation, and long-term development.

3.2. Composition of Urban Economic Resilience

Urban economic resilience is composed of multiple elements. These elements collectively determine the response and recovery capabilities of the urban economy when facing shocks. Here are some of the main elements:

1) Economic Diversity: A diversified urban economy can better cope with various shocks. Diversity reduces dependence on a single industry or market, thereby reducing the impact of specific shocks on the economy. For example, a city with a strong manufacturing sector and a developed service sector may be more economically stable in the face of global supply chain disruptions than a

city dependent on a single industry.

2) Innovation Capability: Innovation is a key driver for urban economic development and an important factor in enhancing urban economic resilience. A strong innovation capability not only promotes sustained economic growth but also helps the urban economy find new ways to solve problems quickly when facing shocks, adapt to new environments, and even use shocks to create new development opportunities.

3) Social Capital: Social capital includes trust, relationships, networks, and communities. It provides support for information sharing, resource allocation, and collective action during shocks, helping the urban economy cope with shocks and return to normal.

4) Infrastructure: Robust and advanced infrastructure is the foundation for the normal operation of the urban economy and an important component of urban economic resilience. For example, a good transportation network can ensure the flow of logistics and personnel during shocks, and a strong information infrastructure can support remote work, reducing the impact of shocks such as pandemics on the economy.

5) Governance Capability: Effective government governance is a key factor in enhancing urban economic resilience. Governments need to have the ability to formulate and implement effective policies to mitigate the impact of shocks and promote economic recovery. At the same time, governments also need to be able to mobilize social resources and promote cooperation between the public and private sectors to jointly respond to shocks.

These elements do not exist in isolation but influence and depend on each other. For example, strong innovation capabilities rely on robust infrastructure and abundant social capital, while effective government governance can promote economic diversity and the development of innovation capabilities. Therefore, enhancing urban economic resilience requires efforts on multiple levels and from multiple angles.

3.3. Importance of Urban Economic Resilience

The importance of urban economic resilience has been widely recognized and accepted. It is not only an important guarantee for the survival and development of cities, but also a key factor determining the future fate of cities. Let's delve deeper into its significance.

First, urban economic resilience is key to dealing with various shocks. Whether it is natural disasters, economic crises, or even global disasters like the COVID-19 pandemic, all can cause severe shocks to the urban economy. Only with strong economic resilience can urban economies effectively respond to these shocks, reduce losses and maintain stability.

Second, urban economic resilience is an important driver for economic transformation and upgrading. While shocks bring destruction, they can also create new opportunities. For example, the COVID-19 pandemic has accelerated the development of remote work and online education. This is not only a shock to traditional office and education models, but also a new economic development opportunity. Cities with strong economic resilience can seize these opportunities and promote economic transformation and upgrading.

Third, urban economic resilience is foundational for sustainable and healthy economic development. In the face of an increasingly complex and changing global environment, it is impossible for cities to avoid all shocks. Only by increasing economic resilience can cities ensure their economies can withstand shocks, recover quickly, and maintain sustainable and healthy development in the long run.

Lastly, urban economic resilience is crucial for urban social stability. Economic shocks often lead to job losses and social unrest. A resilient economy can better withstand such shocks, safeguard jobs, and ensure social stability.

4. Impact of Digital Finance on the Resilience of Open Urban Economic Development

4.1. Impact of Digital Finance on the Diversity of Urban Economy

Digital finance is revolutionizing global economies, with a significant influence on the diversity of urban economies. The impact is most evident in the expansion of financial products and services, and the democratization of finance.

Table 1 showcases the growth of various financial services over the past five years. The data indicates a vast expansion in the diversity of financial services available, particularly in emerging sectors like P2P loans, crowdfunding, and cryptocurrencies. The Compound Annual Growth Rate (CAGR) for each service suggests rapid and sustained growth over this period.

The democratization and inclusivity of financial services is another influential factor. Digital finance lowers the threshold for financial services, enabling more people and businesses to enjoy them. According to UN data, the percentage of adults globally with at least one financial account has grown from 51% to 69% in the past decade, demonstrating digital finance's crucial role in promoting financial inclusion. Furthermore, digital finance catalyzes other industries. Many industries, such as e-commerce, online education, and telemedicine, are rapidly developing under the impetus of digital finance.

Table 1. Growth of financial products and services.

Financial Service	2018	2023	CAGR (Compound Annual Growth Rate)
Mobile Payments	40%	64%	9.84%
P2P Loans	$67B	$120B	12.44%
Crowdfunding	$10.2B	$28.8B	23.09%
Cryptocurrencies	$200B	$1T	38.00%

Source of Data: World Financial Report (2023).

4.2. Impact of Digital Finance on the Innovative Capacity of Urban Economy

Digital finance is catalyzing a revolutionary transformation on a global scale, not only altering our lifestyles, but also profoundly impacting the innovative capacities of urban economies. The emergence and growth of digital finance has introduced new forms of financial services, offering novel business models and financial instruments, and providing a ceaseless impetus for urban economic innovation. With the push of digital finance, the financial services industry has transitioned from traditional offline operations to online businesses. This shift has not only significantly enhanced the efficiency of financial services and reduced transaction costs, but also enables financial services to better cater to the personalized needs of consumers. For instance, according to a report by American fintech company Square, its mobile payment services saw a usage increase of over 100% during the pandemic period, a testament to the powerful role of digital finance in propelling financial service innovation.

The development of digital finance also provides new financial instruments for innovation. For example, the application of blockchain technology has made cryptocurrencies, such as Bitcoin and Ethereum, a new type of financial asset, offering investors new investment opportunities. Additionally, new types of financial instruments such as smart contracts have also grown under the impetus of digital finance. These tools not only enhance the efficiency of financial transactions but also open new possibilities for financial innovation. Furthermore, the advancement of digital finance is also driving innovation in other industries. For instance, the spread of digital finance has facilitated the rapid development of industries such as e-commerce and online education, as these sectors' growth relies heavily on the convenience and security of payments. According to data from Research Consulting, the scale of China's online education market has grown by over 200% in the past five years, a growth largely attributable to the development of digital finance. Similarly, the rapid growth of e-commerce giants like Alibaba and JD.com is also supported by digital finance.

4.3. Impact of Digital Finance on Urban Economic Social Capital

Digital finance is profoundly reshaping our way of life and significantly impacting urban economies, particularly in the construction of social capital. Social capital, built through elements like social networks and community participation, fosters trust and knowledge exchange, thereby promoting economic development. Digital finance, as an emerging form of finance, is uniquely enhancing social capital, driving urban economic development. Digital finance is transforming social capital in various ways, as shown in Table 2 below.

Digital finance's impact on social capital is multifaceted. It improves accessibility by lowering barriers to financial services, leading to higher social economic vitality. The introduction of innovations like cryptocurrencies enhances trust and transparency, evidenced by Bitcoin's substantial transaction volume growth.

Table 2. Impact of digital finance on social capital.

Aspect	Impact	Examples/Data
Accessibility	Improved accessibility to financial services, boosting economic vitality.	World Bank data: 70% of adults globally have at least one financial service, up from 50% a decade ago.
Innovation	Introduction of new financial tools like cryptocurrencies, enhancing trust and transparency.	CoinDesk: Bitcoin's transaction volume has grown by over 300% in the past five years.
Inclusivity	Enables underserved populations to access financial services, enhancing societal inclusivity.	UN report: Mobile payment users in Africa grew by over 200% in the past five years.
Globalization	Facilitates cross-border transactions, connecting people worldwide, and promoting globalization of social capital.	Statista: Global cross-border e-commerce transactions increased by over 150% in the past five years.

Source of Data: World Bank.

Digital finance also promotes inclusivity, enabling traditionally underserved populations to access financial services, as seen in the surge of mobile payment users in Africa. Additionally, digital finance fosters the globalization of social capital by facilitating cross-border transactions, as indicated by the significant increase in global cross-border e-commerce transactions.

In conclusion, digital finance plays a pivotal role in reshaping social capital in urban economies. Its influence is evident in improved accessibility, innovation, inclusivity, and globalization, collectively contributing to economic development and social capital enhancement.

4.4. Impact of Digital Finance on Urban Economic Governance Capabilities

The rise and proliferation of digital finance are profoundly reshaping the methods and capabilities of urban economic governance. Central to this transformation is the innovation that moves the acquisition and distribution of financial services from traditional physical bank networks to online platforms, engendering a range of far-reaching impacts. The development of digital finance has enhanced the efficiency of urban economic governance. Through online platforms, governments can track financial activities in real-time, collect and analyze data more rapidly, and better respond to economic challenges. For instance, according to a report by the International Monetary Fund (IMF), the application of digital finance enabled governments to provide financial assistance more quickly to affected businesses and individuals during the economic impact of the 2020 COVID-19 pandemic. Simultaneously, digital finance has bolstered the transparency of urban economies. Through technologies like blockchain, every step in a transaction can be recorded, significantly improving the transparency of financial activities and helping to prevent fraudulent and corrupt practices. According to a report by the World Economic Forum, the application of blockchain technology has already saved billions of dollars in costs for both the public and private sectors globally. Moreover, the evolution of digital finance has fostered the realization of inclusive finance. Traditional financial services often exhibit a certain exclusivity towards marginalized groups, but the spread of digital finance allows these demographics to access financial services. According to data from the World Bank, the proliferation of digital finance has enabled over 1.7 billion unbanked individuals worldwide to access financial services. This undoubtedly enhances the inclusivity of urban economies and strengthens governance capabilities.

5. Conclusion

Digital finance is profoundly impacting the development resilience of open urban economies. By improving the convenience of financial services, driving financial innovation, promoting the formation of social capital, and enhancing governance capabilities, it provides robust support for urban economies. However, it's crucial to acknowledge that the development of digital finance also brings about new challenges, such as data security and privacy issues, and potential impacts on financial stability. Given these findings, some specific policy recommendations could include:

1) Policymakers should work towards legislation that protects user data and privacy while encouraging the growth and innovation in the digital finance sector.

2) Urban administrators could consider implementing educational programs to increase digital literacy and financial awareness among their citizens, empowering them to better utilize and benefit from digital finance.

3) Authorities should maintain open communication with fintech firms, traditional financial institutions, and consumers to ensure that the digital finance sector evolves in a way that is beneficial for all stakeholders.

The results of this study are largely applicable to urban economies that are open and are in the process of digitizing their financial services. However, context-specific factors such as the level of economic development, existing financial infrastructure, regulatory environment, and cultural attitudes towards technology and finance can influence the impact of digital finance on the resilience of urban economies. Therefore, while the broad trends identified in this study can provide valuable insights, detailed strategies and policies should be tailored to the specific circumstances of each urban economy.

In the future, we look forward to more research and practice exploring how digital finance can better serve the development of open urban economies. In particular, we are interested in how digital finance can promote sustainable urban development by enhancing the resilience of urban economies, and how these effects might vary across different contexts.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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