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Foreign Direct Investment and Urban Economic Resilience

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***Abstract*: This study explores the relationship between economic resilience and Foreign Direct Investment (FDI), with a particular focus on how FDI contributes to enhancing China's economic resilience. Economic resilience, defined as the ability of an economy to absorb, adapt to, and recover from external shocks and uncertainty, has become an increasingly significant research topic in economics. This paper first reviews the origins and definitions of economic resilience, emphasizing its dynamic and complex nature, and discusses the key factors influencing economic resilience, such as institutional frameworks, technological innovation, industrial diversification, government policies, and social and financial infrastructure. Next, the study examines the impact of FDI, especially outward Foreign Direct Investment (OFDI), on China's economic resilience. It reveals that FDI plays a pivotal role in improving China's economic resilience by promoting technological spillovers, industrial diversification, structural upgrades, and employment growth. By reviewing both the literature and empirical studies, the paper highlights how FDI, through external capital inflows and advanced technology transfer, has facilitated China's integration into the global economic system and strengthened its competitiveness. The paper concludes by suggesting future research directions, including the role of digital transformation, environmental resilience, and the differential impact of FDI across industries and regions.**

***Keywords*: Urban Economic Resilience, Foreign Direct Investment.**

1. Introduction

In the context of increasing globalization and economic interdependence, the concept of economic resilience has gained considerable attention as economies face a growing array of challenges, from financial crises to trade wars, pandemics, and environmental disasters. Economic resilience is not only about an economy's capacity to withstand shocks but also its ability to adapt, recover, and thrive in the face of external disruptions. As traditional economic theories struggle to explain and address the complexities of these challenges, scholars have increasingly turned to resilience as a framework for understanding how economies can maintain long-term stability and growth despite volatility and uncertainty (Holling, 1973; Reggia et al., 2002).

The concept of economic resilience has evolved significantly since it was first introduced in ecological theory. Initially applied to ecosystems, resilience was later adapted to economic contexts as scholars recognized the need for a more comprehensive understanding of how economies respond to disturbances. Edward (2012) and Martin (2016) have defined economic resilience as a system's ability to cope with shocks, maintain sustainable development, and undergo structural transformations, such as resource reallocation and industrial restructuring. The increasing frequency and intensity of economic shocks, particularly in the context of deepened globalization and rapid technological advancement, have underscored the need for this dynamic and multi-dimensional approach to understanding economic resilience.

In parallel with the growing interest in economic resilience, Foreign Direct Investment (FDI) has emerged as a critical factor shaping the resilience of economies, particularly in developing countries like China. FDI, defined as investment made by a foreign entity in a country's productive assets, plays a multifaceted role in economic development. It facilitates capital inflows, technology transfer, industrial upgrades, and market access, all of which are essential for enhancing economic resilience (Wang Ying, 2009). FDI also promotes technological innovation, diversifies industrial structures, and strengthens global competitiveness, which are key elements of a resilient economy (Bai Mei and Liu Xinyu, 2014; Yang Lianxing and Liu Xiaoguang, 2016). For China, FDI has played an instrumental role in transforming its industrial landscape, from labor-intensive to technology-intensive industries, contributing to its rapid economic growth and integration into the global economic system (Liu Yu et al., 2022).

While the positive impact of FDI on economic resilience has been well-documented, there remain gaps in understanding the specific mechanisms through which FDI influences resilience. For instance, studies on outward FDI (OFDI) suggest that its effects on China's industrial structure and technological capacity are profound but not always linear. OFDI may promote the technological upgrading of Chinese firms, yet the relationship between OFDI and global value chain (GVC) positioning is still under debate, especially in the context of economic policy uncertainty (Liu Yu et al., 2022). This study aims to explore the interaction between FDI, particularly OFDI, and economic resilience, focusing on its impact on China's technological innovation, industrial upgrading, and employment growth.

Given the importance of economic resilience in today's

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globalized world, understanding the role of FDI in fostering resilience is critical for policymakers. As global economic risks continue to evolve, strategies to enhance economic resilience, including through the promotion of FDI, must be informed by empirical research and robust theoretical frameworks. This paper contributes to the literature by analyzing the dual role of FDI in fostering both technological advancement and industrial transformation, and by offering policy recommendations to strengthen economic resilience in China through targeted FDI strategies.

Furthermore, as the global economy faces new challenges such as digital transformation and climate change, it is essential to examine how these emerging factors interact with FDI to influence economic resilience. The future direction of research may include the role of digital economies, green technologies, and sustainable infrastructure in strengthening urban and regional economic resilience, as well as exploring the differential impacts of FDI across various industries, regions, and types of investment (capital-driven vs. technology-driven). This research will provide valuable insights into how FDI can be leveraged not only for economic growth but also for long-term resilience in the face of global uncertainties.

2. Research on Economic Resilience

A. Origins and Definition of Economic Resilience

Initially, resilience was a concept in physics. It wasn't until 1973 that Holling (Holling, 1973) introduced the concept of ecological resilience, referring to the degree to which an ecosystem recovers from disturbances or shocks and returns to a balanced state.

Economic resilience, an emerging concept in the field of economics in recent years, is increasingly receiving attention from scholars and policymakers. In the latter half of the 20th century, the origins of economic resilience began to emerge, coinciding with profound transformations in the global economy due to deepened globalization and accelerated technological advancements. On the one hand, economic links worldwide have become tighter, and the flow of capital, goods, and information is more free; on the other hand, various economic risks and challenges have followed, such as financial crises, trade wars, and natural disasters. These shocks not only cause significant losses to national economies but also reveal the limitations of traditional economic theories in explaining and addressing complex economic phenomena. As a result, there has been a growing need for new theoretical frameworks and analytical tools to better understand and respond to economic volatility and uncertainty.

In 2002, Reggia et al. applied the concept of resilience from ecological theory to spatial economics, marking the introduction of resilience as an analytical concept in economics. This shift stemmed from a profound recognition of the increasing global economic volatility and uncertainty and the need to study the recovery and adaptability of economic entities when faced with shocks.

From 2002 to 2010, the concept of economic resilience was in its early development stage. Scholars both domestic and international began incorporating the concept of "resilience" into economics, using a range of economic indicators to analyze the state of economies. At this initial stage, the study of economic resilience lacked a mature theoretical framework, standardized theories, or quantitative research methods, and it was mainly used within economic geography. Starting in 2010, the second stage began, focusing on exploration and research (Sun Jiuwen, Sun Xiangyu, 2017).

As research deepened, the definition of economic resilience also gradually expanded. In a 2012 study, Edward defined regional economic resilience as the ability of a regional economic system to respond to unpredictable economic crises and quickly recover to its original balanced state. Based on relevant literature, economist Martin (2016) introduced the concept of robustness (also referred to as economic resilience) as a form of adaptive dynamic adjustment. This concept encompasses four aspects: vulnerability, resistance, adaptability, and recovery capacity. Economic resilience not only includes an economy's ability to withstand external shocks but, more importantly, its capacity to adapt, complete structural transformations, and continuously upgrade, such as through resource reallocation and industrial restructuring (Xu Yuan, Zhang Linling, 2019).

Therefore, the authors argue that economic resilience not only encompasses stability, adaptability, and innovation capacity in traditional economic theory but also emphasizes the dynamic and complex nature of the system as a whole. Specifically, the definition of economic resilience can be understood in the following ways:

First, as a capacity to cope with adverse shocks, economies with high resilience face lower economic risks. When confronted with external shocks such as financial crises, trade barriers, or even natural disasters, resilient economies are able to quickly adjust their economic structure and optimize resource allocation to mitigate the negative effects of the shocks. This adaptive ability is evident not only in the speed of recovery in the short term but also in long-term structural adjustments and transformations.

Second, economic resilience is a capacity for sustainable development. It requires the economy to handle sudden market or external difficulties appropriately while maintaining steady and continuous growth, ultimately achieving long-term sustainable progress. This ability requires the economy to possess innovation capabilities and market competitiveness that allow for continual technological advancement, industry optimization, and improvements in economic efficiency and competitiveness.

Third, economic resilience reflects not only the overall dynamism and complexity of a system but also the complex nature of the economy, which consists of multiple interconnected and interacting subsystems. When an economy is subjected to a shock, the interactions and feedback mechanisms between these subsystems will influence the overall economy's recovery and adaptability. Therefore, enhancing economic resilience requires a comprehensive consideration of the characteristics and relationships between these subsystems, optimizing and coordinating the entire

system.

B. Measurement of Economic Resilience

Regarding the measurement of economic resilience, no unified scientific method has yet been formed, despite various levels of pandemic data analysis. This includes descriptive and explanatory case studies, complex statistical indicators, and more recently, the use of econometric models to calculate the speed of recovery and growth.

Currently, the most representative evaluation framework in academia is the urban resilience indicator system proposed by the Rockefeller Foundation in 2013. This framework is characterized by seven key attributes: flexibility, redundancy, robustness, intelligence, reflectiveness, inclusiveness, and comprehensiveness. It focuses on evaluating multiple dimensions, including individuals, organizations, and places.

At present, scholars are actively exploring resilience system assessment methods for urban development in China. Researchers, based on China's actual circumstances, have developed corresponding evaluation methods for urban resilience levels, which can be broadly categorized into single-indicator and multi-indicator approaches. Simpson (2006) proposed a community disaster resilience index model based on spatial and non-spatial community capital indicators, which include material, socio-cultural, economic, and ecological components. The model calculates community vulnerability and preparedness indices, with the disaster resilience index derived from the ratio of vulnerability to preparedness. Cutter (2010), focusing on post-shock recovery capacity, selected 36 indicators from five perspectives—social, organizational, economic, natural, and physical—which include resource reserves, per capita capital, and unemployment rates, and conducted an assessment. Joerin et al. (2012) developed an urban resilience evaluation system centered on enhancing the resilience of urban communities, covering five dimensions: infrastructure, social, economic, institutional, and natural. In their study, Heeks et al. (2019) proposed an urban resilience evaluation system based on two categories of indicators: functional characteristics and empowerment characteristics, emphasizing the importance of equitable resource use opportunities and rights in urban resilience.

Liu Lan et al. (2020) constructed a multi-dimensional urban resilience evaluation framework based on the city's structural elements and functional relationships. This system starts from three main dimensions—economic, social, and ecological—and uses complex network analysis methods to select a series of key indicators, such as the proportion of the tertiary industry, the number of students in higher education institutions, and green space coverage, to comprehensively assess the resilience level of cities.

Liu Yanping (2021), building on the Rockefeller Foundation's City Resilience Index (CRI) (2013), proposed the China City Resilience Development Index (CRDI) framework. This includes five themes: cultural, economic, social, environmental, and image resilience, as well as 20 sub-themes and over 70 indicators. These indicators cover aspects such as economic growth stability, industrial diversity, innovation capacity, fiscal sustainability, and the degree of foreign economic connections. These metrics provide a comprehensive reflection of urban economic resilience and serve as a foundation for subsequent empirical assessments.

In terms of quantifying economic resilience, scholars have developed different methods. Chen Yiwei and Ding Guanjing (2020) used the entropy-weight method, combining economic resilience indicator data from 264 prefecture-level cities between 2012 and 2018, to quantify and evaluate economic resilience. Through regression analysis, they revealed the long-term equilibrium relationship between the real estate industry and economic resilience. Zhao Chunyan and Wang Shiping (2021) used the actual GDP growth rate of each city in a specific year (such as 2008) as a benchmark. They calculated the minimum and maximum differences between the actual GDP growth rate of each city and that of the benchmark year. Then, by calculating the difference between each city's actual difference and the minimum difference, and dividing by the range of the maximum and minimum differences, they derived a standardized economic resilience index. The higher the index, the stronger the economic resilience of the city.

C. Factors Affecting Economic Resilience

Research from abroad suggests that Western countries have made significant strides in building resilient cities, accumulating a body of knowledge that informs the construction of urban resilience systems. Cutter (2003) identified a range of factors that influence urban resilience, including demographic characteristics such as residents' age, gender ratio, ethnicity, and income levels. These social and economic characteristics shape how communities respond to and recover from disruptions. The interplay of these factors not only affects a city's vulnerability but also its capacity to adapt to external shocks, ultimately influencing its overall resilience.

Boschma (2014) emphasized the importance of institutional factors in regional resilience, pointing out that the diversity of technologies and industries in a region, along with the ability to adapt and establish new sustainable growth pathways after external shocks, are key elements that enhance resilience. His research suggests that a region's ability to foster innovation and diversification—both in industries and technologies—plays a crucial role in sustaining long-term economic growth and mitigating the effects of crises. The institutional environment, which includes policies, governance structures, and institutional frameworks, acts as a catalyst for these processes, underscoring its critical role in shaping regional economic resilience.

In a study by Wang et al. (2021) focusing on Kunming, China, the researchers identified key factors that affect regional economic resilience. Through literature reviews and expert interviews, they developed a hypothetical model that highlights defensive capacity, absorptive capacity, and learning capacity as the main drivers of economic resilience. The study found that defensive capacity—an area's ability to buffer and withstand external shocks—has a direct impact on economic flexibility. This, in turn, enhances the region’s ability to recover and maintain stability. Additionally, the study revealed that

absorptive capacity, which refers to the ability to absorb and utilize external knowledge and resources, mediates the relationship between defensive capacity and overall economic resilience.

The concept of urban resilience was further explored by Zhu Jinhe and Sun Hongxue (2020), who analyzed the spatiotemporal evolution of urban resilience across 55 cities in China's major urban clusters. By employing spatial panel econometric models, their study identified multiple factors influencing economic resilience. These factors include government policies, market conditions, technological development, openness to external forces, and financial structures. The study highlights the complexity of urban economic resilience, where these factors do not operate in isolation but are interconnected and influence one another in a dynamic manner. Therefore, it is essential to consider a holistic approach when developing policies aimed at enhancing urban resilience, taking into account the diverse and interdependent nature of these factors.

Wang Qizhen and Zhu Yingming (2021) conducted a comprehensive analysis comparing how multiple cities' economies performed during crises. They found that urban economic resilience is influenced by a combination of factors, including economic foundations, industrial structure, government policies, social support systems, and natural resource availability. Cities with a strong economic base were found to exhibit greater economic stability and resilience to risks. Additionally, cities with diversified industrial structures and robust innovation capabilities were more capable of finding new avenues for growth during economic downturns or crises. The research also emphasized the critical role of effective government policies and a well-developed social support system in enhancing urban economic resilience, particularly during times of crisis.

Sun Jiuwen and Chen Chaojun (2022), in their study of different city types, analyzed factors that affect regional economic stability and resilience. By classifying cities based on location quotients, they found that factors such as industrial specialization and diversification, population density, technological investment, government economic measures, and the level of financial development are deeply interconnected. These factors collectively determine the resilience of regional economies, with each influencing the other in complex and mutually reinforcing ways. This highlights the need for cities to strike a balance between industrial diversification and specialization, and to invest in human capital, technology, and innovation to maintain economic stability.

Factors that influence urban economic resilience can be broadly categorized into several key areas. These include the spatial structure of cities, the degree of industrial diversification, the concentration and agglomeration of industries, labor productivity, GDP, environmental infrastructure, fiscal expenditure, R&D expenditure, and human capital. The degree to which industries are diversified and agglomerated in a city can significantly influence its capacity to recover from shocks. Cities with a diversified industrial base are better positioned to withstand external shocks, as they can pivot to other sectors when one industry faces disruption. Similarly, the degree of industrial agglomeration can lead to increased productivity and innovation through the spillover effects of knowledge and technology.

Furthermore, investment in R&D and the development of human capital are essential for enhancing urban economic resilience. R&D expenditure drives innovation, leading to technological advancements that can help cities adapt to changes in the global economy. Human capital, including education and skills development, plays a crucial role in ensuring that a city's workforce is capable of adapting to new industries and technologies, thus enhancing the overall economic resilience of urban areas.

The development of environmental infrastructure is another important factor in strengthening urban resilience. Resilient cities must be equipped with sustainable infrastructure to manage and mitigate the impact of extreme weather events, climate change, and other environmental challenges. This includes investments in renewable energy, water management systems, and green technologies, which not only protect urban areas from environmental risks but also contribute to long-term economic stability.

In conclusion, urban economic resilience is shaped by a multitude of factors, each interacting in complex ways. A comprehensive understanding of these factors is essential for policymakers seeking to enhance the resilience of cities, particularly in the face of global challenges such as economic crises, climate change, and technological disruption. By fostering an environment that encourages diversification, innovation, and the development of human and technological capital, cities can improve their ability to recover from shocks and maintain long-term economic stability.

3. Research on Foreign Direct Investment

Foreign Direct Investment (FDI) plays a significant role in China's participation in the global economy, with important strategic implications for national economic development, industrial structure optimization, technological advancement, and global competitiveness.

Wang Ying (2009) conducted an empirical analysis using time-series data from 1985 to 2007 to examine the impact of outward foreign direct investment (OFDI) on China's industrial structure adjustment. The study revealed that OFDI primarily influences industrial structure adjustment through four factors: import structure, technological progress, employment structure, and fixed capital. These influences, among others, include promoting the development of high-end industries in China, facilitating technology transfer and absorption, driving global industrial chain布局, fostering service industry growth, and strengthening global economic ties. These interacting factors collectively contributed to optimizing and upgrading China's industrial structure, laying a solid foundation for sustained and stable economic development.

Research by Huang Xiaoling and Liu Hui indicates that FDI has positively impacted the optimization of China's domestic employment structure, primarily through labor migration,

improving workforce quality, creating new employment opportunities, and promoting technological innovation and industrial upgrading.

Bai Mei and Liu Xinyu (2014) suggest that China can enhance its technological capabilities and upgrade its industrial structure by utilizing technology-seeking FDI (TSFDI) to acquire innovative resources from host countries, assimilate and absorb them. In addition to strengthening independent innovation, China should actively absorb and introduce advanced consumption concepts. Regarding the entry of foreign-invested enterprises, China should collaborate closely, using foreign openness to stimulate domestic consumption, improving domestic demand structures, and optimizing industrial structures. Especially in emerging industries, FDI from developed countries can introduce new technologies, knowledge, and international market information, which benefits the development of emerging industries, adjusts the industrial structure, and enhances the competitive advantages of Chinese firms.

Yang Lianxing and Liu Xiaoguang (2016) found that both at the industry and product levels, OFDI's reverse technological spillovers promoted the enhancement of China's export technological complexity. This suggests that OFDI may serve as an accelerator for the transformation and upgrading of China's trade structure. As enterprises expand their overseas investments, they gradually shift from labor-intensive industries to technology-intensive sectors. This shift not only adds value to domestic industries but also fosters the development of emerging industries, injecting new vitality into economic growth.

Liu Yu et al. (2022) delved into whether OFDI helps Chinese firms move up the global value chain (GVC). The study found that, in the context of economic policy uncertainty, OFDI does not significantly promote the upgrading of Chinese firms' GVC positioning and may even produce a downgrading effect. To address this challenge, comprehensive policies should be implemented at the firm, industry, and national levels to improve the quality and efficiency of OFDI and to promote domestic economic circulation and high-quality development.

Fu Shaojun and Sun Qiang (2017) used the total factor productivity standards of 21 countries along the Belt and Road Initiative and employed a panel Tobit model to examine the relationship between China's outward FDI and technological progress in host countries. The study found that China's investment positively affects technological advancement in these countries and, when combined with technology spillovers and development investment in all 21 countries and developing nations, contributes to global technological progress.

Li Yang and Che Libo (2021), based on enterprise-level panel data of FDI, conducted an in-depth study on the impact of Chinese enterprises' outward FDI on the skill structure of their parent companies' workforce, considering investment motives, export substitution effects, and technology spillover effects. The study found that outward FDI significantly increases the proportion of technical employees in the parent company's workforce, effectively optimizing its skill structure and having a positive impact on macroeconomic growth.

4. Conclusion

This study has explored the critical factors influencing economic resilience, particularly focusing on the role of external direct investment (FDI) and its interaction with urban and regional economic resilience. It has been demonstrated that economic resilience is shaped by a complex interplay of factors, including institutional frameworks, technological innovation, industrial diversity, government policies, and social and financial infrastructures. The introduction of foreign direct investment (FDI) plays a pivotal role in shaping economic resilience by fostering technological spillovers, facilitating the diversification of industries, and promoting structural upgrades within the economy. Moreover, the positive effects of FDI on employment, income growth, and integration into global economic systems further enhance the long-term stability and resilience of urban economies.

The findings underscore that resilience is not a static quality but a dynamic attribute that evolves through various factors and mechanisms. Cities with strong economic foundations, diversified industrial structures, and robust innovation capabilities are more likely to exhibit higher levels of resilience in the face of economic shocks and global uncertainties. Effective government policies and social support systems also play a crucial role in sustaining urban economic resilience. Thus, policymakers must take a holistic approach, recognizing the interconnected nature of these factors and their impact on urban development.

While the current research provides valuable insights into the factors shaping economic resilience, it also opens several avenues for future exploration. One promising direction is the need for a deeper understanding of the specific mechanisms through which FDI influences the resilience of different sectors, particularly in emerging and developing economies. Future studies could examine the differential impacts of FDI across industries, regions, and types of foreign investment, such as technology-driven versus capital-driven investments.

Another area for future research involves the role of digital transformation and the digital economy in enhancing urban resilience. As cities increasingly adopt digital technologies, understanding how digital infrastructure and innovation ecosystems contribute to economic resilience will be essential. This includes exploring the impact of digitalization on job creation, the labor market, and the adaptability of industries to future global disruptions, such as pandemics or technological shifts.

Additionally, the interaction between environmental resilience and economic resilience warrants further attention. As climate change and environmental risks become more pronounced, future studies could explore how sustainable practices and green infrastructure contribute to the resilience of urban economies. This research could focus on the integration of environmental sustainability into economic resilience frameworks, emphasizing the importance of adaptive infrastructure and resource-efficient technologies.

Lastly, longitudinal studies that track the evolution of urban resilience over time, particularly in response to long-term trends such as demographic changes, technological advancement, and

shifts in global trade patterns, would provide valuable insights. These studies could also investigate how cities that have undergone significant transformations in terms of industrial structure or external investment perform in terms of economic resilience compared to cities that have maintained traditional structures.

In conclusion, while the current body of research has made significant strides in understanding the multifaceted nature of economic resilience, ongoing exploration in these emerging areas will be crucial for developing more comprehensive resilience frameworks and for informing policies aimed at enhancing economic stability in the face of increasingly complex global challenges.

Based on the above analysis, the author concludes that Foreign Direct Investment (FDI) has a profound impact on economic development, injecting substantial external capital into China. Furthermore, the introduction of FDI has, to some extent, promoted technological innovation and industrial upgrading. The involvement of foreign-invested enterprises positively affects the technological levels and industrial structure in relevant sectors in China. The technological spillover effects brought by foreign-invested enterprises provide Chinese companies with opportunities to learn and absorb advanced technologies and management practices, enhancing their competitiveness and innovation capacity.

In addition, FDI has created opportunities for employment growth and income enhancement in China. The entry of foreign-invested enterprises has generated numerous job opportunities, which in turn raises residents' income levels. The promotion of FDI also supports China's economic globalization process. By attracting foreign capital, China can better integrate into the global economic system and engage in international competition and cooperation.

Research on the factors influencing economic resilience in China covers aspects such as industrial structure and diversification, technological innovation, and labor productivity. It also emphasizes the importance of policy environment, social capital, financial development, and institutional openness. Moreover, the ability to respond to extreme weather events is a crucial factor in enhancing urban economic resilience. Currently, domestic research on FDI spans a wide range, including analyses of scale and trends, industrial selection, regional differences, policy environment, risk management, theoretical and empirical studies, and quality improvement.

In conclusion, studying the impact of OFDI on urban economic resilience not only broadens the scope of economic resilience research but also holds significant value for enhancing national economic stability, promoting industrial structure optimization and upgrading, advancing technological progress and innovation, and providing scientific evidence for government policy-making. Through a deeper understanding of the relationship between OFDI and economic resilience, the government can more accurately grasp the mechanisms and pathways through which OFDI influences urban economic development. This will enable the formulation of more targeted and effective policy measures, fostering the healthy development of the national economy.

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