

The Latest Research Progress of Regional Economic Resilience in China

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ABSTRACT

The world is currently experiencing the greatest change in a century, economies are facing an increasing number of shocks from different dimensions, how to resist shocks and recover quickly from them has become a focus of attention around the world, and the need to enhance economic resilience has been repeatedly emphasized in China's government work reports. Therefore, in recent years, scholars from all over the world have gradually increased the research on regional economic resilience. Firstly, in this paper, conceptual origin of regional economic resilience and its understanding by Chinese scholars are clarified by combing through previous papers. Secondly, the international sources of single-index and multi-index measurement methods and their application in China are summarized. Thirdly, this paper analyzes the viewpoints of scholars around the world on the influencing factors of regional economic resilience from three perspectives. Finally, it summarizes the shortcomings of the research on regional economic resilience in China and prospects for the future.

Keywords: *economic resilience; regional economic resilience; external shock; equilibrium*

1. INTRODUCTION

At present, the international landscape and the international system are undergoing profound adjustments, a new round of industrial and technological revolution is emerging and the world is experiencing a major change unprecedented in a century. And even the financial crisis, debt crisis, epidemic crisis and other crises are intertwined, constantly impacting the development pattern of the world economy. Some countries and regions cannot effectively respond to various internal and external shocks so that their economies are not only in a long-term downturn, but also have a severe lack of economic resilience. In particular, the outbreak of COVID-19 at the end of 2019 has had a severe impact on the economy of all countries, which had very different performances. When this epidemic came, some countries experienced supply chain disruptions, sustained price increases, and massive industrial job losses; while other countries were able to recover or basically return to the state of economic development before the impact of the epidemic in a relatively short period of time. Therefore, the role of economic resilience has once again drawn high attention from all countries.

For example, the Chinese government mentioned the importance of enhancing economic resilience in the 2022 Central Economic Work Conference.

In the context of a sharp increase in external uncertainties, faced with the challenge of how to effectively respond to various types of shocks, an important answer that has been given by research is to enhance economic resilience. The word "resilience" originates from the Latin root "resiliere", which was first proposed by American ecologist Holling (1973) and defined as the ability of a system to cope with disturbance or interference through resistance to damage and rapid recovery^[1]. Later, Reggiani et al (2002) introduced it into the economic field and gradually applied it to many fields^[2]. After the international financial crisis in 2008, different countries showed different states under the impact of the financial crisis, some countries were able to recover quickly after this shock, while some countries were deeply hit, and they were difficult to recover their economies. This phenomenon has been paid attention to by many scholars, and since then economic resilience has gradually become an international research hotspot. The responses of different regions in China to external shocks are also different. Therefore, the concept of economic

resilience has been mostly used in regional economic resilience studies since it was introduced into China, especially in recent years, there have been a lot of high-quality papers. However, since the study of regional economic resilience is still a relatively new research field, there is no systematic and perfect research system on the concept, influencing factors and measurement methods of regional economic resilience. Therefore, on the basis of systematically reviewing the origin, definition and measurement of regional economic resilience and so on in foreign countries, this paper analyzes the research progress in China and provides a reference for subsequent scholars.

2. THE CONCEPT OF REGIONAL ECONOMIC RESILIENCE

2.1. Evolution of resilience

Resilience was first developed in engineering and then applied widely in ecology, economics and sociology. It has undergone three stages of evolution. First of all, engineering resilience emphasizes the single equilibrium state of the system, that is, in the face of external shocks, a resilient system has the ability to return to the equilibrium state before the shock, and does not change the structure and function of the system. The second is the ecological resilience which pursues multiple equilibrium. When the external disturbance exceeds the amount of disturbance the system can bear, the structure and function of the system will change and make it enter a new equilibrium state (Hang Su, 2015)^[4]. Finally, evolutionary resilience is different from the former two in that it no longer pursues the equilibrium state of the system, but emphasizes the ability of the system to cope with and recover from external shocks (Martin et al., 2010). Thus, evolutionary resilience is comparatively the most suitable for the study of economic systems.

2.2. The connotation of regional economic resilience

2.2.1. The origins of regional economic resilience

Reggiani et al. (2002)^[2] first applied the resilience theory to the field of economics, believing that the concept of resilience should be a key idea in the study of the dynamics of spatial economic system, especially when the spatial economic system is dealing with shocks or disturbances. Hill (2008) argues that resilience includes not only the successful recovery of an economy from a shock, but also changing its original growth path and finding a new one. Wink (2014) expressed it as an ability to avoid, resist or adapt to crises, as well as the ability to deal with negative shocks and adverse conditions, placing more emphasis on the system's resistance to external shocks^[5]. He introduced this concept into the field of regional economy, which

expanded the scope of economic resilience research and played an increasingly important role.

2.2.2. Definition of regional economic resilience by domestic scholars

There are three main translations of "resilience" in China, namely, elasticity, recovery and resilience. But elasticity places too much emphasis on bounce back after impact and is easily confused with "elasticity"(Jiowen Sun and Xiangyu Sun, 2017)^[6]; recovery emphasizes the ability to adjust and recover. Comparatively speaking, resilience can better express the connotation of flexibility, adaptability and transformation ability(Bing Zeng and Yan Zhang, 2018)^[7], hence resilience is the most appropriate translation. The relevant researches in China started relatively late, and the research results are mainly concentrated in recent years. So the definition of regional economic resilience by Chinese scholars is made on the basis of learning from foreign scholars. Most Chinese scholars define it with the help of the idea of evolutionary resilience. For example, Bing Zeng et al (2018) believe that regional economic resilience is more suitable for interpretation from the perspective of evolutionary resilience because it is characterized by complex adaptability, non-equilibrium and dynamic evolution^[7]. Based on Martin's (2012)^[9] definition of "evolutionary resilience" of regional economy, they define regional economic resilience as defence, recovery, organization and renewal. Similarly, Liangang Li et al (2019) argues that regional economic resilience is a dynamic evolution and development process, and it can use the thought of evolutionary resilience, therefore regional economic resilience is defined as the economic system in the face of external shock resistance or by adjusting the transition to quickly restore system development path before impact even turn to a better development path's resilience^[3]. This is also a development of Martin's point. Yuan Xu and Huyan Deng (2020) emphasize that in an environment with evolutionary resilience, a resilient economic system can reallocate resources, adjust industrial structure and determine new growth paths in a more effective way with the help of external shocks^[10].

2.3. Summary

Since the concept of regional economic resilience is introduced, the academic community has been developing its understanding, and the connotation of the concept has been gradually expanded and deepened. However due to the definition of regional economic resilience by different scholars based on different perspectives, there is no universally accepted concept at this stage, and it is still in the concept exploration stage. After sorting out the definition of regional economic resilience by different scholars, this paper argues that the core connotation of regional economic resilience is the resistance and recovery ability of economic system in the

face of external shocks, and the higher level of regional economic resilience not only has the resistance and recovery ability, but also places more emphasis on the ability to find new development paths quickly after the shocks and achieve better development than before the shocks.

3. EMPIRICAL STUDY ON REGIONAL ECONOMIC RESILIENCE

It is generally believed that the study of regional economic resilience can be divided into two stages (Jiowen Sun and Xiangyu Sun, 2017)^[6]: 2002-2010 is the first research stage, which is the stage of concept formation and development. The research mainly imitates and introduces theories from other disciplines, and there are great differences in the accurate meaning of regional economic resilience how to measure it, etc... The second phase is from 2010 to present, the empirical analysis research is developing rapidly, many scholars through the quantitative analysis method for the calculation of the regional economic resilience and influence factors of evaluation, but still has not established a mature and complete theoretical system, and the empirical analysis of regional economic resilience by scholars mainly focuses on its measurement methods and influencing factors.

3.1. Measurement of regional economic resilience

3.1.1. Multi-indicator measurement method

Scholars in China mostly refer to Briguglio's (2009) study to make comprehensive measures of regional economic resilience from multiple angles. (1) Two-dimensional angle. Zhen Zhang et al (2020) constructed a comprehensive index evaluation system of economic resilience from the two-dimensional perspective of resistance and reconstruction force to study the impact of industrial structure in northeast China on regional economic resilience^[11]. However, this index system is still not perfect due to difficulties in data acquisition, small sample size and other factors. (2) Three-dimensional angle. Chong Zhang et al (2021) set a multidimensional comprehensive evaluation index system consisting of three first-level indicators, namely, defence, recovery and transformation, to measure the economic resilience of 285 cities at prefecture-level and above in mainland China from 2006 to 2018. (3) Four-dimensional angle. Liangang Li et al (2019) and Gonrui Cui (2021) constructed a comprehensive evaluation system from the four dimensions of regional resistance to crisis, resilience, adaptability and transformation^[3,12].

3.1.2. Single-indicator measurement method

This method selects an index such as GDP,

employment and trade volume to measure regional economic resilience. The basic principle of the measure is to compare the predicted value of an index with the actual value to measure the economic resilience of a region. (1) The most representative method used by Martin (2012)^[9] in studying the economic resilience of various regions in The UK is to measure regional economic resilience by using the sensitivity index of each region in each period. Chinese scholars have chosen employment level as an indicator to measure and analyze the economic resilience of the Guangdong-Hong Kong-Macao Greater Bay Area (Chenglin Qin et al, 2020; Yi Liu et al, 2020)^[13,14]; GDP growth rate is also used to measure the impact of digital economy on urban economic resilience (Congbo Chen and Azhong Ye, 2021)^[15]. (2) Doran & Fingleton (2018) proposed to estimate the equation between output and employment by using static Vanden's law on the basis of dixon-Thirlwal circular causality model, and obtain counterfactual employment according to the counterfactual output and estimated results, and then compare the difference between counterfactual employment and real employment growth to measure economic resilience. Representative papers such as Yuan Xu and Linling Zhang (2019) used this method to measure the resistance and recovery of 230 Cities in China, and concluded that diversified industrial structure is more conducive to enhancing urban economic resilience^[16].

3.1.3. Advantages and disadvantages of multiple indicators and single indicators

Although Multi-indicator measurement method can measure regional economic resilience comprehensively from multiple perspectives, it also has some defects. Firstly, different index systems constructed by many scholars lack comparability of research results due to their great differences. And then, it is limited to data missing or inconsistent. Thirdly, it may confuse cause and effect (Chenglin Qin and Liling Liu, 2020; Jiowen Sun and Xiangyu Sun, 2017; Shuguang Hu, 2019)^[13,6,4]. The Single-indicator measurement method has strong operability and comparability, and is generally not affected by the missing index data. But it also has drawbacks: first of all, it has high requirements on the selection of indicators, which should be sensitive to external shocks and reflect most of the information of regional economic resilience; and then, it is not comprehensive enough and may ignore other variables in the economy, resulting in the final research conclusion is doubtful (Chenglin Qin and Liling Liu, 2020; Zhang Chong and Weiwei Jiao, 2021)^[13]. Due to the lack of accurate measurement of regional economic resilience, there is no quantitative standard for measuring regional economic resilience. Tongyue Li and Taihui Zhu(2019) point out a future development direction namely, on the basis of relevant empirical studies, the quantitative evaluation system of regional economic resilience is

formed by taking into account factors such as the magnitude of recession and recovery time after suffering from shocks, combined with relevant driving policies and institutional environment, and using indicator synthesis methods such as hierarchical analysis^[17].

3.2. Influencing factors of regional economic resilience

3.2.1. The industrial structure

Most of the existing researches regard industrial structure as the most important factor affecting regional economic resilience, especially the debate on the impact of diversification and specialization of industrial structure on regional economic resilience has always been a hot topic. Zhen Zhang et al (2020)^[11] divided the viewpoints of existing scholars into two types: firstly, in the face of external shocks, diversified industrial structure can effectively disperse risks, while in the specialized industrial structure, the leading industry is unable to find a replacement industry in the short term after the shock, resulting in fewer opportunities for workers to re-find jobs and weaker economic resilience; secondly, for the specialized industrial structure, enterprises will further improve their competitiveness under the role of learning, matching and sharing, so as to better withstand shocks. If the diversification of industrial structure is deliberately sought and the specialized generation mechanism is ignored, the economic resilience will be weakened. Diversification of industrial structure can be further divided into irrelevant diversification and related diversification. Based on the theoretical framework of evolutionary economic geography, Yuan Xu and Huyan Deng (2020) found that cities with high independent diversity had higher resistance to economic resilience through new economic innovation^[10]. They also believed that cities with higher levels of relative diversification can show higher resilience through general innovation during recovery.

3.2.2. Social capital

“SOCIAL CAPITAL” is the relationship network, trust and norms of behavior within a certain social space (Ming Lu et al,2008). In recent years, social capital has been regarded by many scholars as an important factor affecting regional economic resilience. Hauser (2007) argues that too much social capital accumulation, or too much association of different actors in a social network, creates a consistent perception within the region, leading to cognitive lock-in, which is detrimental to the development of regional economic resilience. But, Agder (2009) proposed that social capital plays a positive role in improving regional adaptability. Similarly, Tanglin Ye et al (2021) also confirmed the promoting effect of social capital on economic resilience^[19]. He took the three major urban agglomerations in the east as the research object

and believed that different types of social capital would enhance regional economic resilience through different mechanisms.

3.2.3. Institutional factors

Institutions are also considered important factors in analysing and explaining regional economic resilience. Some scholars believe that the reduction of government intervention and the formulation of loose institutions are conducive to the formation of new growth paths, thus promoting the resilience of regional economy (Whitley, 2000; Jiowen Sun and Xiangyu Sun, 2017)^[6]. Chinese scholar Ruozhi Hu et al (2020), based on the research of China's national conditions, believe that the socialist system with Chinese characteristics and the national governance system have opened up an infinite space for the strengthening and potential release of China's regional economic resilience, and the basic economic system of socialism with Chinese characteristics has promoted the powerful release of regional economic resilience^[20]. Some scholars also confirmed the strengthening effect of institutional factors on regional economic resilience based on the government's debt tolerance (Jianqiang Li et al, 2020).

3.3 Summary

Through sorting out the influencing factors of regional economic resilience, it can be found that the industrial structure plays the most important role. Macro factors such as national governance system, government tolerance of debt; micro industrial structure and social capital. Therefore, this paper argues that regional economic resilience is the result of synergistic action of different factors in multiple fields. A full understanding of the main influencing factors of regional economic resilience will not only help achieve regional transformation and upgrading, but also strengthen the economic foundation and it can endow new means for macroeconomic regulation and control to effectively deal with external shocks (Hang Su, 2015)^[4]. However, which factors play a decisive role in the formation and development of regional economic resilience needs further research.

4. CONCLUSIONS

By combing through the international and Chinese papers on regional economic resilience research, most of its conceptual definition by Chinese scholars at this stage is based on the perspective of evolutionary resilience extending on the views of foreign scholars, and always insists on the conceptual core of regional economic resilience as the resistance of economic decency to external shocks, the ability to recover development and the ability to reinvent development paths. Although the definition of the concept shows a blossoming trend, there

is no universally accepted definition in the academic community.

In terms of empirical research, academics mainly use multi-indicator or single-indicator measurement methods currently, but both methods have shortcomings, coupled with the fact that quantitative standards on regional economic resilience have not yet been established, so the current measurement methods cannot accurately measure regional economic resilience. Although scholars in China have pointed out the future research direction of the measurement method, its feasibility still needs further study. Regional economic resilience is the result of the combined effect of multiple factors, and industrial structure is currently considered to be one of the most important influencing factors of regional economic resilience. But whether it will play a key role and what factors will play a decisive role in the formation and development of regional economic resilience still need to be further explored.

At present, China is in the "14th Five-year Plan" period when the environment at home and abroad is undergoing significant changes. In this context, it is urgent to solve a series of problems, such as how to strengthen regional economic resilience and how to play a role in the face of increasing external shocks. Chinese scholars should seize this opportunity to accelerate the pace of research, clarify the exact meaning of regional economic resilience, develop a set of measurement methods that can scientifically and accurately measure regional economic resilience. Furthermore, scholars in China also should explore the determinants of regional economic resilience as soon as possible, and establish a regional economic resilience research system with Chinese characteristics to provide a model for international related research.

REFERENCES

- [1] Holling, C S. Resilience and Stability of Ecological Systems[J]. *Annual Review of Ecology & Systematics*, 1973, 4 (1) : 23.
- [2] Reggiani A, Graaff T D, Nijkamp P. Resilience: An Evolutionary Approach to Spatial Economic Systems[J]. *Networks & Spatial Economics*, 2002, 2 (2) : 19.
- [3] Lian-gang Li, Ping-yu Zhang, Jun-tao Tan, Haoming Guan. Review on The Evolution of Resilience Concept and Research Progress on Regional Economic Resilience[J]. *Human Geography*, 2019 (2) : 8.
- [4] Hang Su. Advances in Research on Economic Resilience[J]. *Economic Perspectives*, 2015 (8) : 8.
- [5] Wink, Rüdiger. Regional Economic Resilience: Policy Experiences and Issues in Europe[J]. *Raumforschung Und Raumordnung*, 2014, 72 (2) : 2.
- [6] Jiuwen Sun, Xiangyu Sun. Progress of Regional Economic Resilience Research and Exploration of Application in China[J]. *Economic Geography*, 2017, 37 (10) : 9.
- [7] Bing Zeng, Yan Zhang. A review of the concept of regional economic resilience and its research progress[J]. *Inquiry into Economic Issues*, 2018 (1) : 7.
- [8] Bing Zeng. Evaluation of China's Provincial Economic Resilience Under the Impact of COVID-19 Epidemic[J]. *Journal of Industrial Technological Economics*, 2021, 40 (07) : 8.
- [9] Martin R. Regional economic resilience, hysteresis and recessionary shocks[J]. *Journal of Economic Geography*, 2012, 12 (1) : 32.
- [10] Yuan Xu, Huyan Deng. Diversification, Innovation Capability and Urban Economic Resilience[J]. *Economic Perspectives*, 2020 (08) : 17.
- [11] Zhen Zhang, Ruyu Zhao, Shouyun Yang. Research on Spatial Spillover Effect of Industrial Structure and Regional Economic Resilience in Northeast China[J]. *Science & Technology Progress and Policy*, 2020, 37 (5) :10.
- [12] Geng-rui CUI. Can Digital Finance Enhance China's Economic Resilience[J]. *Journal of Shanxi University of Finance and Economics*, 2021, 43 (12) : 13.
- [13] Chenglin Qin, Liling Liu. Analysis of Economic Resilience in the Greater Bay Area - Based on the Perspective of Economic Linkage Network[J]. *Academic Forum*, 2020, 43 (06) : 9.
- [14] Yi Liu, Jiehan Ji, Yifan Zhang, Yu Yang. Economic resilience and spatial divergence in the Guangdong-Hong Kong-Macao Greater Bay Area in China[J]. *Geographical Research*, 2020, 39 (09) : 15.
- [15] Congbo Chen, Azhong Ye. Digital Economy, Innovation Capacity and Regional Economic Resilience[J]. *Statistics & Decision*, 2021 (17) : 16.
- [16] Yuan Xu, Linling Zhang. The Economic Resilience of Chinese Cities and Its Origin:From the Perspective of Diversification of Industrial Structure[J]. *Finance & Trade Economics*, 2019, 40 (07) : 17.
- [17] Tongyue Li, Taihui Zhu. How to reshape financial resilience? --An Analytical Framework for Post-Crisis International Financial Regulatory Reform[J]. *Financial Regulation Research*, 2019 (03) : 17.

- [18] Chengkun Liu, Xinran Li. Analysis of the Impact of Industrial Structure Diversification on Urban Resilience under Public Health Emergencies: A Case Study of Guangdong-Hong Kong-Macao Greater Bay Area[J]. *Guizhou Social Sciences*, 2021 (01) : 10.
- [19] Tanglin Ye, Guoliang Li, Xinruo Liang. Can Social Capital Enhance Regional Economic Resilience Effectively? ——Empirical Analysis from the Three Major Urban Agglomerations in Eastern China[J]. *Inquiry into Economic Issues*, 2021 (05) : 11.
- [20] Ruochi Hu, Jingzhou Wu. On the Resilience and Potential of China's Economy[J]. *Journal of Hebei University of Economics and Business*, 2020, 41 (06) : 7.
- [21] Sunley, Peter, Martin, et al. On the notion of regional economic resilience: conceptualization and explanation[J]. *Journal of economic geography*, 2015, 15 (1) : 42.
- [22] Ron Martin, Peter Sunley, Ben Gardiner, Peter Tyler. How Regions React to Recessions: Resilience and the Role of Economic Structure[J]. *Regional Studies*, 2016. 50 (4) : 25.