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Original Paper

Research on the Relationship and Influencing Factors of Digital Economy Industry in the Chengdu Chongqing Economic Circle

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Abstract

The digital economy has become a key engine for regional economic growth. As the "leader" of the western economy, the Chengdu Chongqing dual city economic circle will play an important role in promoting rapid economic growth and achieving high-quality development in advancing the Western Development, promoting regional coordinated development, and building a new development pattern of "dual circulation". This study introduces the Cobb Douglas production function and takes the digital economy indicators of the Chengdu Chongqing dual city economic circle as the research object. The panel cointegration test method is used to empirically analyze the annual economic data of the Chengdu Chongqing dual city economic circle from 2013 to 2020, verifying that the digital economy has a positive effect on the economic growth of the Chengdu Chongqing dual city economic circle. The scale of the digital economy, digital economy industries, and digital economy infrastructure have a significant promoting effect on the economic growth of the Chengdu Chongqing dual city economic circle, but the integration of the digital economy does not have a significant driving effect on the economy. Based on this conclusion, a path for promoting the development of digital economy in the Chengdu Chongqing dual city economic circle has been proposed.

Keywords

Dual loop, Chengdu Chongqing region, Digital economy, Digital industry

1. Introduction

At present, the domestic and international environment for China's economic development is undergoing profound and complex changes. General Secretary Xi Jinping has put forward an important discourse on the new development pattern of "dual circulation", which requires "gradually forming a new development pattern with domestic circulation as the mainstay and domestic and international dual circulation mutually promoting each other". The Chengdu Chongqing dual city economic circle is not only the fastest growing and strongest economic region in western China, but also the connection point between the "the Belt and Road" and the Yangtze River Economic Belt. It plays a gateway and hub role in building a new pattern of dual cycle development. In the past two decades, the Chengdu Chongqing economic circle has

achieved rapid economic and social development based on its abundant resource advantages and favorable policy support, but at the same time, it has also exposed a series of development problems. The regional division of labor model of "providing resources in the western region, labor in the central region, production in coastal areas, and export of products" has led to the transfer of production factors such as capital, resources, and labor from the Chengdu Chongqing region to the eastern region. The economic development of the Chengdu Chongqing dual city economic circle faces many challenges such as low industrial level, weak market entities, and insufficient industrial cooperation. In the context of high-quality economic development, how to leverage the industrial foundation, location and other advantages of the Chengdu Chongqing Economic Circle to promote economic growth in the Chengdu Chongqing Economic Circle plays an important role in enhancing China's economic development momentum and strengthening its development advantages.

With the deepening of a new round of technological revolution and industrial transformation, the global industrial chain, value chain, and innovation chain are being reorganized, and the digital economy is becoming a key driving force for the economic growth of global urban agglomerations. Chengdu and Chongqing, as the leading cities in the western economy, have a solid foundation for the development of the digital economy. Among them, Chongqing, as one of the six major old industrial bases in China, has rich industrial categories, providing a wide range of intelligent application scenarios and industrial foundations for the digital economy; Chengdu, relying on its advantages of intensive scientific and educational resources and concentrated innovation activities, has provided sufficient talent, technology, and innovation support for the development of the digital economy. In the "Outline of the Plan for the Construction of the Chengdu Chongqing Dual City Economic Circle", both cities explicitly propose to take the construction of the National Digital Economy Innovation and Development Pilot Zone as the guide, jointly build a new highland for digital economy development, and create an important growth pole for high-quality development in the western region, creating a favorable development environment for the digital economy. However, from the current situation of digital economy development in the Chengdu Chongqing Economic Circle, the overall digital economy is still in the exploratory stage. The core competitiveness of emerging digital industries is relatively low, and traditional industries lack the driving force for digital transformation. These problems seriously affect the speed of digital economy development in the Chengdu Chongqing Economic Circle and further limit the overall economic growth of the Chengdu Chongqing region. It is urgent to deeply explore the linkage mechanism between the digital economy and regional economic growth in the Chengdu Chongqing region, with the development of the digital economy as the foothold, comprehensively promote the high-quality development of the digital economy in the Chengdu Chongqing dual city economic circle, and provide important reference value for optimizing the development path of the digital economy in the Chengdu Chongqing dual city economic circle in the next step.

2. Literature Review

The digital economy refers to a series of economic activities that use data resources as key production factors, modern information networks as important carriers, and the effective use of information and communication technology as an important driving force for efficiency improvement and economic structure optimization. As a new form of economy, the digital economy plays an important driving role in the development of the economy and society, as well as the transformation and upgrading of the industrial chain. Scholars have conducted extensive research on the driving mechanism of the digital economy on economic and social development, from theoretical exploration to empirical analysis.

At the theoretical level, scholars have deeply analyzed the driving mechanism of the digital economy on economic and social development from both macro and micro perspectives. At the macro level, Dahlman (2016) proposed that the capital accumulation and labor productivity improvement brought about by the digital economy can significantly promote economic growth; Guo Han and Lian Yuyan (2020) believe that the digital economy can change the supply mode and supply system of production factors, break through the constraints of time and space on production factors, and enhance the possibility of sustainable economic growth. At the micro level, the academic community has explored the upgrading of industrial structure driven by the digital economy. Zhang Hong (2020) believes that the development model of the digital economy is industrial integration, and various industries can promote the deep integration of digital technology and industry through digital transformation, thereby improving the efficiency of industrial development. Ding Zhifan (2020) pointed out that the impact of informatization on traditional industries is not limited to cost savings and efficiency improvement, but more importantly, through cross-border integration mechanisms to achieve fundamental changes in the logic of value creation, especially with the deep application of information technology, information or data is transformed from potential production factors to real productivity, promoting division of labor reform and industrial restructuring, becoming a new source of industrial innovation and competitive advantage The transformation of traditional industries driven by information consumption: basic connotations and internal mechanisms; Yang Peiqing (2020) proposed that the digital economy not only promotes industrial upgrading, but also promotes the emergence and development of new business models, enriches new models of information industry development, and promotes high-quality economic development.

At the empirical level, scholars have analyzed the contribution of the digital economy to economic growth from two perspectives: technological progress and industrial upgrading, in order to verify the scientific validity of the theory that the digital economy drives high-quality economic development. From the perspective of technological progress, Yan Pengfei et al. (2004) used the DEA Malmquist method to measure and decompose total factor productivity, technological efficiency, and technological progress index, and empirically tested them with human capital and institutional change. However, due to inconsistencies in total factor productivity, variable selection, and calculation methods, especially regarding the measurement of total factor productivity, there is currently no consensus. Different scholars have studied the measurement values, resulting in significant differences in parameter values and

conclusions. Based on this method, Fan Hejun (2021) verified that digitization can significantly promote China's economic growth and high-quality development. Among them, it has a significant positive impact on the growth of total factor productivity and technological efficiency, but has no significant impact on the development of technological progress. However, the level of education can enhance the promoting effect of digitalization on economic growth; From the perspective of industrial upgrading, Fang Haowei (2021) used panel data on digital trade in 31 provinces of China from 2014 to 2019 and applied the mediation effect model to verify that digital trade not only has a significant direct promoting effect on high-quality economic development, but also industrial structure upgrading can play a partial mediating effect, promoting the positive impact of digital trade on high-quality economic development. Jiang Ying (2021) believes that integrating digital technology into the real economy can optimize the import learning effect embedded in the global value chain, accelerate technology diffusion between enterprises and industries, and promote regional upgrading and rationalization of industrial structure.

In addition, scholars have conducted extensive empirical research on the high-quality development of regional economies driven by the digital economy. Based on the balanced panel data of 284 prefecture level cities in China from 2003 to 2018, Lu Yuxiu (2021) used the spatial Durbin model (SDM) under dual fixed effects to verify that the development of digital economy not only significantly improves the quality of local urban economic development, but also has significant spatial spillover effects. Zhang Shaohua (2021) used provincial panel data from 2010 to 2019 in China to conclude that the positive effect of the digital economy on economic growth is more pronounced in the central and western regions, areas with lower urbanization rates, and regions with high material capital investment; In the selection of specific regions, Zhong Yexi (2020) explored the spatial pattern and influencing factors of the digital economy level in the Yangtze River Economic Belt through spatial econometric models, mathematical statistical analysis, and other methods. It was found that regions with poor economic foundations can also rely on the development of digital economy to achieve "overtaking on the bend". Yang Lufeng (2021) used Guizhou Province as an example to analyze the focus and governance innovation of the deep integration of digital economy and real economy development from a theoretical perspective.

Through the review of the above literature, we have found that the academic community has achieved fruitful research results in driving high-quality economic development through the digital economy. However, existing research has mostly focused on analyzing the linkage between the digital economy and China's economic growth from a macro regional perspective. There is still a lack of research on the mechanism and influencing factors of the digital economy in driving high-quality economic development in local areas, especially underdeveloped cities such as Chengdu and Chongqing. In the context of building a new pattern of regional coordinated development, it is crucial to promote the economic development of underdeveloped areas such as Chengdu and Chongqing. At present, the construction of the Chengdu Chongqing Economic Circle has been elevated to a national strategic plan. Actively exploring the high-quality development path of the Chengdu Chongqing economy and enriching the theoretical support for economic development in the region is an important task for the academic

community. Therefore, this study is based on the Cobb Douglas production function and introduces the digital economy index to analyze the mechanism and influencing factors of digital economy driving digital economy growth in the Chengdu Chongqing region. It enriches the mechanism and path of digital economy driving economic growth in underdeveloped western regions represented by the Chengdu Chongqing region from both theoretical and practical perspectives, providing theoretical support for further promoting the construction of a new development pattern of "dual circulation".

3. Theoretical Model

3.1 Transmission Mechanism of Fixed Parameter Economic Growth Model

The Cobb Douglas production function was proposed by American mathematician Cobb and economist Douglas when studying the relationship between input and output. It is mainly used to predict the future production and development of a country or enterprise. According to the definition of the Douglas production function, we assume that the level of regional output is mainly influenced by economic level, capital input, and labor input. Therefore, in the following equation, Y represents the regional gross domestic product, and its value mainly depends on the comprehensive technological level A, capital K, and L labor force in the region. ∂ It is the output elasticity of capital and the rebound elasticity of labor force, representing random terms.

$$Y = AK^{\partial}L^{\beta}V^{\mu}$$

In this study, we assume that the mechanism of the role of the digital economy in the growth of the digital economy in the Chengdu Chongqing region is mainly manifested through three aspects: (1) using digital technology as a factor input, promoting social production efficiency through the improvement of technological level and the value of data elements, thereby promoting economic growth; (2) The digital economy itself is an industry, namely digital industrialization, which contributes to regional economic development through the integration of digital industries into regional economic growth; (3) The integration of digital technology into various industries, namely industrial digitization, emphasizes the impact of digital economy on upgrading industrial structure and improving factor productivity, promoting economic growth in the Chengdu Chongqing region. To verify the validity of the above conclusions, this study conducted empirical analysis using the Cobb Douglas production function. In order to analyze the driving effect of the digital economy on regional economic growth, we need to construct the functional relationship between the output level Y of the regional production function and digital technology, digital industrialization, and industrial digitization, in order to measure the linkage mechanism between the digital economy and regional economic growth. Therefore, the above equation can be rewritten as:

$$Y = (A_1 + A_n)\phi^{\gamma}K^{\partial+\gamma d_k}L^{\beta+\gamma d_l}V^{\mu}$$

Among them, A_1 represents the progress of production technology brought about by digital technology factors, $A_n$represents the technological progress brought about by non digital technological factors, ϕ represents the level of digital economy industrialization, and γ represents the output elasticity of digital economy industrialization. In addition, industrial digitization refers to the changes in production quantity,

quality, and efficiency brought about by the application of digital technology in traditional industries, which are reflected in the production function. That is, the output elasticity of capital and labor will change with the application of digital technology. $d_k = d\partial / d\gamma$ represents the degree to which the output elasticity of digital economy changes with the change of capital output elasticity, and $d_l = d\beta / d\gamma$ represents the degree to which the output elasticity of digital economy changes with the change of labor output elasticity. Through the integration of digital technology, the proportion of input factors in various industries will change, thereby achieving optimal resource allocation and improving the marginal output level of regional capital and labor. Therefore, $d_k > 0$, $d_l > 0$. If the natural logarithm is taken on both sides of the above equation, the production function equation is as follows:

$$\ln Y = \ln(A_1 + A_n) + \gamma \ln \phi + (\alpha + \gamma d_k) \ln K + (\beta + \gamma d_l) \ln L + \mu$$

In addition, assuming that the technological progress of digital technology factors A_1, the technological progress of non digital technology factors A_n, the input of digital technology industry ϕ, the input of capital factors K, and the input of labor factors L remain unchanged, and the coefficient variables α、β、γ are first-order homogeneous functions. The partial derivative of the elasticity of digital technology output γ on both sides of the above equation is shown below:

$$dY / d\gamma = \ln \phi + 2(d\partial / d\gamma) \ln K + 2(d\beta / d\gamma) \ln L$$

Because $\ln \phi$、$\ln K$、$\ln L$、$d\partial / d\gamma$、$d\beta / d\gamma$ is greater than zero, therefore $dY / d\gamma \geq 0$Finally, assuming$y = dY / d\gamma, \phi = \ln \phi, \partial = d\partial / d\gamma, k = \ln K, \beta = d\beta / d\gamma, l = \ln L$, the above equation can be expressed as:

$$y = \phi + \partial \times k + \beta \times l + \mu$$

Therefore, based on the above results, if we only consider the contribution of digital technology to regional economic growth, the production function is: $f = f(A_1, \phi, \gamma)$, which is the impact of three factors: technological progress of digital technology factors, input of digital technology factors, and output elasticity of digital technology factors on output level. Therefore, theoretically speaking, the three forms of digital economy integration into industries are linked to regional economic growth, that is, the digital economy promotes regional economic growth through the transmission mechanism of deep integration of digital technology and industries.

3.2 The Transmission Mechanism of an Economic Growth Model Incorporating Time-varying Parameters

Under the influence of policy changes and various domestic and international economic environments, the development of the digital economy, regional economy, and industrial structure will also undergo unprecedented changes. Fixed parameter models may not reflect these changes in economic structure. Therefore, this study further introduces a variable parameter model with time-varying parameters to analyze the dynamic changes in the linkage between the digital economy and regional economy. The above equation becomes the corresponding time-varying production function form as follows:

$$Y_t = A(t) K_t^{\partial_t} L_t^{\beta_t} V_t^{u_t}$$

$$Y_t = [A_1(t) + A_n(t)]K_t^{\partial_t} L_t^{\beta_t} V_t^{u_t}$$

$$Y_t = [A_1(t) + A_n(t)]\phi_t^{\gamma_t} K_t^{\partial_t} L_t^{\beta_t} V_t^{u_t}$$

$$Y_t = [A_1(t) + A_n(t)]\phi_t^{\gamma_t} K_t^{\partial_t + \lambda_t d_{k_t}} L_t^{\beta_t + \lambda_t d_{k_t}} V_t^{u_t}$$

$$\ln Y = \ln[A_1(t) + A_n(t)] + \gamma_t \ln \phi_t + (\partial_t + \lambda_t d_{k_t}) \ln K_t + (\beta_t + \lambda_t d_{k_t}) \ln L_t + \mu_t$$

$$dY/d\gamma = \ln \phi + 2(d\partial_t/d\gamma_t) \ln K_t + 2(d\beta_t/d\gamma_t) \ln L_t$$

$$y_t = \phi_t + \partial \times k_t + \beta \times l_t + \mu_t$$

4. Empirical Verification of the Linkage between Digital Economy and Economic Growth in the Chengdu Chongqing Region

4.1 Sample Selection and Econometric Models

Based on the above model, this study takes 21 prefecture level cities and autonomous prefectures in Sichuan and 41 districts and counties in Chongqing as cross-sections. Using data from websites such as the National Bureau of Statistics, the Ministry of Industry and Information Technology, the Sichuan Provincial Bureau of Statistics, and the Chongqing Municipal Bureau of Statistics, the economic development data of the Chengdu Chongqing region from 2013 to 2020 was selected as the time span, and the following panel data model was constructed:

$$\ln grp = \partial_1 \ln szgm_{it} + \partial_2 \ln szjc_{it} + \partial_3 \ln szcy_{it} + \partial_4 \ln szrh_{it} + \mu_{it}$$

4.2 Variable Selection and Indicator Definition

In the panel data model constructed in 3.1, the dependent variable is the economic growth scale of the Chengdu Chongqing region, and we selected the regional gross domestic product of the Chengdu Chongqing region to represent it. The explanatory variable is the digital economy index, which is a comprehensive indicator that combines a series of economic activities with digital technology as the main factor. Based on the characteristics of the digital economy, the China Academy of Information and Communications Technology has constructed an economic framework for the digital economy, measuring the digital economy index from five dimensions: digital economy scale index, digital economy industry index, digital economy integration index, digital economy spillover index, and digital economy infrastructure index to reflect the driving effect of the digital economy on social efficiency. Xu Xianchun (2020) systematically calculated the indicators of digital economy added value and total output using industry added value structure coefficient, digital economy adjustment coefficient, and industry added value rate Liu Jun (2020) built a digital economy evaluation index system from three dimensions of information development, Internet development and digital transaction development. According to the definition of the digital economy and its core industries by the National Bureau of Statistics, we can also know that the digital economy includes two parts: digital industrialization and industrial digitization. Therefore, based on existing research results, this study constructed four dimensional variables, namely the Digital Economy Scale Index, Infrastructure Index, Digital Economy Industry Index, and Digital Economy Integration Index, to present the driving force of the digital economy on the economic and social development of the Chengdu Chongqing region. As shown in Table 1, where:

The Digital Economy Scale Index ($szgm_{it}$): includes indicators such as the total R&D investment in the Chengdu Chongqing region, the intensity of R&D investment, the full-time equivalent of R&D personnel in industrial enterprises above designated size, the number of invention patent applications in industrial enterprises above designated size, information transmission, software and information technology service industries, urban employment personnel, and technology market transactions, which reflect the production capacity, spillover capacity, and utilization capacity of the digital economy. It measures the driving force of the digital economy on regional economic growth;

Digital infrastructure index ($szjc_{it}$): mainly expressed by the length of long-distance optical cable lines, telephone penetration rate, Internet penetration rate, Internet broadband access ports, number of domain names and other variables, reflecting the prying effect of digital economic infrastructure on regional economic growth;

Digital Economy Industry Index($szgm_{it}$): The National Bureau of Statistics defines the core industries of the digital economy as digital product manufacturing, digital product service, digital technology application, and digital factor driven industries in the "Classification of Digital Economy and Its Core Industries". Therefore, this study takes telecommunications services, software services, software products, information technology services, embedded system software, as well as digital product manufacturing industries such as mobile communication handheld devices, microelectronic computers, and integrated circuits, as the starting point to measure the digital economy industry index in the Chengdu Chongqing region;

The Digital Economy Integration Index ($szrh_t$): refers to the degree of integration between the digital economy and traditional industries such as industry, agriculture, and services. Therefore, we have selected indicators such as the number of websites owned by enterprises, the number of enterprises engaged in e-commerce transactions, and e-commerce sales to measure the degree of integration between the digital economy and traditional industries. In addition, due to the reliability of data on agricultural digital transformation, we use the total power of agricultural machinery as a substitute variable to measure the empowering effect of agricultural digital transformation on improving agricultural production efficiency.

Table 1. Indicator System for Digital Economy Driven Economic Growth in Chengdu Chongqing Region

一级指标	二级指标	指标属性
数字经济基础设施	长途光缆线路长度（万公里）	正向
	电话普及率（%）	正向
	互联网普及率（%）	正向
	互联网宽带接入端口（万个）	正向
	域名数（万个）	正向
数字经济指数	R&D经费投入总量(亿元)	正向
	研发经费投入强度（%）	正向
	规模以上工业企业R&D人员全时当量（人年）	正向
	规模以上工业企业发明专利申请数（件）	正向
	技术市场成交额（亿元）	正向
	信息传输、软件和信息技术服务业城镇单位就业人员（万人）	正向
数字经济产业指数	电信业务总量（亿元）	正向
	软件业务收入（万元）	正向
	软件产品收入（万元）	正向
	信息技术服务收入（万元）	正向
	嵌入式系统软件收入(万元)	正向
	移动通信手持机产量（万台）	正向
	微型电子计算机产量（万台）	正向
	集成电路产量（万块）	正向
数字经济融合	企业拥有网站数（个）	正向
	电子商务销售额(亿元)	正向
	有电子商务交易活动的企业数(个)	正向
	农业机械总动力（万千瓦）	正向

4.3 Model Calculation and Result Analysis

Unit root inspection of panel 1

This study conducted unit root tests on panel data for the five optimized variables in the model. Through horizontal and first-order difference processing, the results show that the digital infrastructure index, digital scale index, and digital integration index passed the level test. After passing the first-order difference value, the regional GDP index and digital industry index also passed the test at confidence levels of 1% and 5%, respectively. Overall, all variables meet the stationarity requirements of the cointegration model (Table 2).

Table 2. Panel Unit Root Inspection

检验方法		grp	szjc	szgm	szcy	szrh
FC-ADF	水平值	-1.174698	-5.101538	-6.258495	0.440646	-8.69222
		(0.8265)	(0.0397)	(0.0103)	(0.9801)	(0.0044)
	一阶差分值	-21.54618	-17.22956	-6.218183	-16.39379	-0.347338
		(0.0002)	(0.0004)	(0.0173)	(0.0005)	(0.9322)
FC-PP	水平值	-1.64874	-3.208516	-12.41275	-0.73167	-5.371816
		(0.7163)	(0.1683)	(0.0002)	(0.9109)	(0.0219)
	一阶差分值	-1.988646	-4.11495	-10.91339	-9.054259	0.417281
		(-0.5023)	(0.0849)	(0.0014)	(0.0037)	(0.9852)
KPSS	水平值	0.0099	0.0016	0.0031	0.0269	0.0019
		(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)
	一阶差分值	0.0056	0.1479	0.4294	0.0269	0.0585
		(0.022)	(0.7194)	(0.3475)	(0.0001)	(0.7523)

2-panel cointegration regression test

In the panel cointegration regression test, we used Eviews to construct a regression function between the independent and dependent variables. The regression test results indicate that,

Table 3. Equation Regression Test

Variable	Coefficient	Std.Error	t-Statistic	Prob.
C	0.341089	0.105309	3.238946	0.0177
LNGRP-LNSZCY	0.71794	0.077454	9.28018	0.0001
C	0.196821	0.053508	3.678323	0.0104
LNGRP-LNSZGM	0.748296	0.039355	19.01379	0.0000
C	0.252721	0.114502	2.207127	0.0494
LNGRP-LNSZJC	0.826145	0.084216	9.809788	0.0001
C	0.3299882	0.162698	2.028188	0.0889
LNGRP-LNSZJC	0.825683	0.119664	6.89989	0.0005

The regression coefficients of the constructed equation reached a significant level ($P<0.05$), indicating a causal relationship between the independent and dependent variables. We subsequently conducted a staggered ADF test, and the results showed that, The P-value is $0.0417<0.05$, indicating a significant difference in ADF values ($P<0.05$) (Table 4), suggesting a cointegration relationship between the digital economy index, digital economy scale index, digital economy industry index, digital economy infrastructure index, and digital economy integration index.

Table 4. Unequal Stationarity Test

		t-Statistic	Prob.
Augmented Dickey-Fuller test statistic		-3.073209	0.0417
Test critial values:	1% level	-5.119808	
	5%l evel	-3.51955	
	10% level	-2.898418	

3-panel cointegration regression estimation

By conducting a random effects model test on the sample data, the random effects values of each variable reached a significant ($P<0.05$) or extremely significant ($P<0.01$) level, XXXXXX

Table 5. Panel Cointegration Analysis

Variable	Coefficient	Std.Error	t-Statistic	Prob.
C	0.297172	0.205658	1.444982	0.0471
SZGM	0.985342	0.167589	5.879516	0.0000
SZJC	0.901870	0.214368	4.207110	0.0002
SZRH	-0.825046	0.209951	-3.929698	0.0004

In summary, we have constructed an optimized regression model between the digital economy and economic growth:

$$grp = 0.3szcy + 0.1szgm + 0.9szjc - 0.8szrh$$

The digital economy as a whole has a positive effect on the economic growth of the Chengdu Chongqing region, among which the digital economy industry, digital infrastructure, and digital economy scale have all played important driving roles in the economic growth of the Chengdu Chongqing region. However, the impact of the digital economy integration index on regional economic growth is not consistent with what we have envisioned, and whether this impact is long-term or cyclical is worth further analysis.

5. Discussion and Conclusion

In summary, based on the Cobb Douglas production function, this article introduces digital economy indicators and derives that digital economy infrastructure and industries play an important driving role in the economic growth of the Chengdu Chongqing region. In the context of the new development pattern of "dual circulation", the digital industry driven by digital technology has become an important engine for driving economic growth. Digital technology builds a new industrial ecosystem and generates stronger innovation vitality, gradually making the digital economy industry the dominant industry. To promote the construction of the Chengdu Chongqing dual city economic circle, Chengdu and Chongqing should seize the new trend of digital economy, prioritize the development of digital economy industry, and work together to build a complete digital economy industry chain, supply chain, and innovation chain on the basis of optimizing and integrating the digital resources of Chengdu and Chongqing. Together, they will create a world-class digital industry cluster, achieve the transformation of the industrial chain of the Chengdu Chongqing dual city economic circle, form an important growth pole for high-quality development in the western region, and create an inland open strategic highland. To this end, the Chengdu Chongqing region can start from the following aspects, using the digital economy as an engine to drive rapid social and economic development, and jointly build an important growth pole for high-quality development in the western region.

Firstly, improve the mechanism of collaborative development and strengthen the foundation of cooperation. Strengthening the driving role of the digital economy in the economic growth of the Chengdu Chongqing region requires the region to move from low-level collaboration to a high-level collaborative development stage with close division of labor, reasonable layout, and strong linkage, in order to enhance the efficiency and level of collaborative development. To this end, the Chengdu Chongqing region should improve the mechanism for overall planning and formulation of digital industry development plans, and promote the joint preparation of digital industry plans and consultation on digital industry development issues by leveraging the leading role of the government; Strengthen the cross regional coordination mechanism of digital resources and factors, give full play to the leading role of the market, and promote the free flow of data factor resources across regions; Building a mechanism for sharing benefits in the digital industry, while taking into account the overall development goals of urban agglomerations and the development interests of various regions, we aim to create a regional development community of shared interests and compensation, and strengthen the foundation for digital

industry cooperation between Chengdu and Chongqing.

Secondly, leverage comparative advantages and promote win-win development. The endowment of factors in each region is different. To promote the construction of the Chengdu Chongqing dual city economic circle, its essence is to break down the restrictions of administrative divisions, remove obstacles to the coordinated development of Chengdu Chongqing, reduce the circulation cost of advantageous resources between the two regions, and thus achieve the process of complementary advantages between the two cities. The key to this process lies in fully tapping into the comparative advantages and core demands of developing the digital industry in Chengdu and Chongqing, and achieving close connections between the two regions' complementary industries. Therefore, based on the differences in industrial levels and diversification of industrial content between urban areas in the Chengdu Chongqing region, the two cities can leverage their comparative advantages, clarify their specific division of labor in the digital industry, and form a joint force for the development of the digital industry. This will provide a solid foundation and bottom support for the collaborative construction of a digital industry ecosystem in the Chengdu Chongqing region.

Thirdly, explore cooperation models to achieve innovative development. To promote the coordinated development of the digital economy in the Chengdu Chongqing region, we should further identify cooperation needs and work together to propose countermeasures. Therefore, in response to the requirements of the national digital economy innovation and development pilot zone, the Chengdu Chongqing region actively explores the development model of digital industry agglomeration and jointly builds a world-class digital economy industry cluster; Strengthen the co construction and sharing of digital new infrastructure, and create a benchmark area for advanced new infrastructure; Explore the integration path of digital economy and real economy, and jointly build a new highland for the development of digital economy; Enhance the digitalization level of government governance and build a new paradigm of smart governance for mega cities; Strengthen international cooperation in the digital economy and create an international exchange and cooperation platform.

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