ISSN: 2710-0170

The Digital Economy, Market-based Factor Allocation and Shared Prosperity

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Abstract

The digital economy is leading China's quality change, efficiency change and power change, and has become a new driving force to promote the development of common affluence. This paper measures the level of digital economy development in three dimensions: digital infrastructure, digital industrialization and industrial digitization, and the level of common affluence development in two dimensions: overall affluence and shared affluence, and then empirically examines the relationship between digital economy, factor market allocation and common affluence using provincial panel data from 2014-2021. It is found that the digital economy development has a significant positive contributing influence on common affluence. Factor market-oriented allocation is a mediating variable in the process of digital economy contributing to the development of common wealth, and digital economy accelerates the development of common wealth through optimizing factor market-oriented allocation. The above findings have some reference significance for exploring how to solidly promote common affluence in the era of digital economy in China.

Keywords

Digital Economy; Market-Based Factor Allocation; Shared Prosperity; Mediating Effects.

1. Introduction

The digital economy has increasingly become one of the key engines driving the world's economic development and social transformation. Data resources have become an important factor of production for promoting the digital economy and regional development, and through the penetration and transformation of various economic and social fields, they have realized the empowerment and upgrading of traditional factors of production, greatly contributing to the improvement of factor quality and flow efficiency (Cai et al., 2021) [1], creating good conditions for the improvement of innovation efficiency under cross-regional factor utilization. However, due to the gradual nature of China's market-oriented reforms, the development of factor markets still lags relatively behind compared to the increasingly mature and well-established product markets (Zhang et al., 2011) [2], and deep-seated, systemic problems such as resource mismatch, efficiency loss, and structural imbalance are prominent, constraining the further improvement of factor allocation efficiency. in March 2020, the State Council of the Central Committee of the Communist Party of China issued the "Opinions on Building a More Perfect Market-oriented Mechanism for Factor The Opinions on Institutional Mechanism for Allocation" clearly pointed out that the decisive role of the market in allocating resources should be given full play, the integration of data resources should be strengthened, and the development momentum embedded in the digital economy should be fully cultivated and utilised. Therefore, against the background of the global situation of the new crown pneumonia epidemic and the many uncertainties in the domestic and international economic environment, it is of great theoretical value and practical significance to clarify the intrinsic link between the

ISSN: 2710-0170

digital economy, market-based allocation of factors and common prosperity, in order to develop the digital economy and further implement the common prosperity development strategy.

2. Research Hypothesis

While penetrating, transforming and adding value to traditional factors, the digital economy can also promote the integration and synergy of various factors such as labour, capital and data, reduce distortions in the matching of factor markets and promote market-based allocation of production factors, thereby further stimulating creativity and market vitality throughout society, guiding the synergistic concentration of various factors towards advanced productive forces, promoting high-quality economic development and building a higher level of socialist market This is a fundamental, holistic and strategic reform of the economic system, and is the basic path to fully exploit, utilise and bring into play the positive role of factor resources in material production, achieve high-quality development and realise common prosperity on the basis of development. The effective resolution of information asymmetry in the digital economy further strengthens the factor market and the screening ability of the factors themselves, optimises the institutional mechanism for the market-based allocation of factors, and enhances the inclusiveness and coordination of the factor market. The dual enhancement of factor quality and factor mobility has led to a stronger willingness of factors to move, further strengthening the spatial correlation of innovation activities between regions. On the one hand, the market-based allocation of factors can reasonably guide the effective allocation of factor resources through the "invisible hand" and promote the concentration of various factors in advanced productive forces, and the resulting factor outflow crisis will, to a certain extent, force inefficient enterprises to actively implement digital transformation, and strengthen the exchange and learning with various entities in the region through digital technology and digital platforms. This will in turn lead to a joint increase in factor gains and innovation efficiency. On the other hand, the efficient allocation of factors in the market under the empowerment of the digital economy enables innovation agents to break through the time and space barriers and connect with each other for more in-depth interaction and cooperation, realising the complementary advantages of technology, information, resources and other factors, breaking through the existing technological innovation path, stimulating the level of knowledge spatial spillover and promoting enterprises to take the path of high-quality development. As a result, we put forward the following two hypotheses.

H1: There is a positive correlation between the development of the digital economy and the achievement of shared prosperity.

H2: Market-based factor allocation plays a mediating role in the positive correlation between the digital economy and shared prosperity.

3. Study Design

3.1. Model Building

To explore the relationship between the digital economy and shared prosperity, the following benchmark regression model was constructed.

$$CP_{it} = \alpha_0 + \beta_1 DE_{it} + \gamma_2 Z_{it} + \mu_i + \theta_t + \varepsilon_{it} \quad (1)$$

where, i and t denote province and time respectively, CP is the level of common wealth development, DE denotes the digital economy development variable, Z is a set of control variables, μ, θ and ε denote province fixed effects, time fixed effects and random disturbance

ISSN: 2710-0170

terms respectively, and β and γ are the regression coefficients of the explanatory and control variables.

In order to further investigate the possible impact of the digital economy on the common wealth through the market allocation of factors, a mediating effects model was thus further employed to examine the transmission mechanism of the digital economy empowering the common wealth based on the baseline regression model, which was set up as shown below.

$$Ma_{it} = \alpha_0 + \alpha_1 DE_{it} + \alpha_2 Z_{it} + \mu_i + \theta_t + \varepsilon_{it} \quad (2)$$

$$CP_{it} = \beta_0 + \beta_1 DE_{it} + \beta_2 Z_{it} + \beta_3 Ma_{it} + \mu_i + \theta_t + \varepsilon_{it} \quad (3)$$

Where, Ma denotes factor market allocation and the other variables and parameters denote the same meaning as in the previous section.

3.2. Relevant Variables and Data Sources

3.2.1. Explained Variable

The explained variable in this paper is the level of common prosperity (CP). Common prosperity is actually a state in which all people achieve material, spiritual and cultural needs satisfaction, and is shared on the basis of "prosperity" [3], which should include two dimensions: overall prosperity and the degree of sharing the fruits of development [4]. By drawing on the research results of previous scholars, a common affluence development index system was constructed, which includes two primary dimensions: overall affluence and shared affluence, seven secondary dimensions and 34 tertiary indicators. The panel data entropy weighting method has the advantages of simple calculation and reasonable results. In this paper, a time variable is added to the entropy weighting method so that comparisons can be made between different years.

3.2.2. Core Explanatory Variables

The core explanatory variable in this paper is the level of digital economy development (DE). At present, there is no unified way to measure the digital economy, and this paper measures the level of digital economy development in each province from three dimensions: digital infrastructure, digital industrialization and industrial digitization [5-6]. (1) Digital infrastructure. Considering four aspects of digital economy development, including hardware, software, users and talent base, it mainly reflects the ability and potential of each province to develop digital economy by using digital technology and talents. 11 specific indicators are selected to reflect the level of digital infrastructure. (2) Digital industrialisation. Considered from three aspects: digital industry, digital services and digital innovation, it focuses on evaluating the development status of digital information-related industries in each province, and 9 specific indicators are selected to measure the development level of digital industrialisation in each province. (3) Digitalisation of industry. Ten specific indicators were selected to measure the level of digitalisation of industries in each province, taking into account three aspects: digital transformation, digital transactions and digital finance.

3.2.3. Control Variables

In order to explore more comprehensively the impact effects and mechanisms of the development of the digital economy to empower shared prosperity, the following control variables are chosen: (1) innovation capacity (Ia), expressed by the intensity of research and development (R&D) funding. (2) human capital level (Hum), using the average number of years of education per capita as an indicator of human capital level. (3) foreign direct investment (Fdi), expressed as the total number of foreign-invested enterprises. (4) openness to the

ISSN: 2710-0170

outside world (Ou), measured as the ratio of total imports and exports of foreign trade to the GDP of the year. (5) industrial structure level (Struct), measured as the industrial structure level index (the proportion of primary industry x_1 + the proportion of secondary industry x_2 + the proportion of tertiary industry x_3) [7].

3.2.4. Intermediate Variables

This paper uses factor market-oriented allocation (Ma) as the mediating variable and draws on previous research results to construct a comprehensive evaluation index system of factor market-oriented allocation containing 52 sub-indicators from various micro-levels such as property rights protection, regional coordination and competition neutrality [8]. Based on this index system, this paper uses the entropy weighting method to calculate the index of market-oriented factor allocation level of each region from 2014 to 2021.

3.2.5. Data Sources

This paper uses balanced panel data for 31 provinces across China from 2014-2021, with data sourced from the EPS data platform, the China Statistical Yearbook, the China Science and Technology Statistical Yearbook, the China Tertiary Industry Statistical Yearbook, provincial statistical yearbooks and the Wind database, with some missing data supplemented by the moving average method.

4. Empirical Analysis

4.1. Analysis of Baseline Regression Results

Table 1. Baseline regression results

Variables	CP	CP1	CP2
DE	0.6591** (0.0635)	0.5595** (0.0577)	0.0996*** (0.0114)
Ia	0.0268** (0.0078)	0.0248* (0.0071)	0.0020 (0.0014)
Fd	0.0210** (0.0107)	0.0165* (0.0097)	0.0046** (0.0019)
Struct	0.1851*** (0.0380)	0.1212*** (0.0345)	0.0638*** (0.0068)
Ou	-0.0016 (0.0056)	-0.0019 (0.0051)	0.0003** (0.001o)
Hum	0.0601 (0.0405)	0.0592 (0.0367)	0.0007* (0.0073)
R2	0.8965	0.8803	0.8849

Notes: Values in parentheses are standard errors, ***, ** and * indicate significant at the 1%, 5% and 10% levels, respectively. Same as in later tables.

The results of the Hausman test showed that the fixed-effects model was more applicable than the random-effects model, so the regression analysis was conducted using the fixed-effects model. According to the table below, the regression coefficients of the level of digital economy development on common wealth were all positive and passed the significance test at the 1% level. This indicates that there is a significant positive effect of the digital economy on shared prosperity, given the differences in the effects of innovation capacity and the level of industrial structuring in different provinces. The results of this benchmark regression confirm the

ISSN: 2710-0170

research hypothesis1 that the development of the digital economy can contribute to the achievement of shared prosperity, both in terms of increasing the overall level of prosperity, which has a significant "bigger cake" effect, and in terms of promoting shared prosperity, which has a certain "better cake" effect.

4.2. Intermediary Effects Test

In order to further test the transmission mechanism of the impact of the digital economy on the common wealth, an empirical analysis was carried out using the mediating effect model based on the benchmark regression. The Bootstrap test proves the existence of a mediating effect, indicating that factor marketisation has the condition of being a mediating variable. Further analysis reveals that factor market allocation plays a significant mediating role in the process of empowering the common wealth in the digital economy. the regression coefficients of factor market-based allocation as a mediating variable and the digital economy on common wealth are both significantly positive, indicating that the digital economy can indirectly influence common wealth through optimising factor market-based allocation. This structure validates research hypothesis 2.

Table 2. Regression results for intermediate effects

Variables	Ma	CP
DE	6.5348*** (1.2747)	0.5557*** (0.0991)
Ma		0.0442*** (0.0045)
Ia	0.0841 (0.1086)	0.0265*** (0.0080)
Fd	0.9303*** (0.1278)	0.0915*** (0.0103)
Struct	-1.7541** (0.7079)	-0.0609 (0.0527)
Ou	0.0953* (0.0551)	0.0268** (0.0041)
Hum	2.5612*** (0.3901)	-0.1214*** (0.0309)
Adjustment of R	0.4413	0.7932
Bootstrap inspection		[0.0829,0.3849]

Notes: Bootstrap test reports confidence intervals at the 95% confidence level.

5. Conclusion and Suggestions

This paper combines panel data of 30 provinces in China from 2014-2021, and establishes a panel fixed-effects model and a mediating-effects model to empirically analyse the relationship between the digital economy, market-based allocation of factors and common wealth. The following conclusions are drawn: Firstly, digital economy development has a significant positive contribution to common wealth, i.e. digital economy development significantly achieves common wealth. Secondly, digital economy development positively affects the market-based allocation of factors and indirectly contributes to the realization of common wealth through optimizing the market-based allocation of factors. Based on the above findings, the following suggestions are made.

Firstly, we should accelerate the development of the digital economy and continuously improve the digital infrastructure. One of the main reasons for the significant differences in the

ISSN: 2710-0170

development of the digital economy across regions is the uneven infrastructure. Therefore, it is important to focus on the deep integration and development of digital technology and the real economy, especially the integration of new technologies such as big data, artificial intelligence and blockchain with manufacturing, services and agriculture, so as to provide more kinetic support for empowering the common wealth.

Secondly, we should make full use of the vitality of the market for factors brought about by the development of the digital economy and strengthen inter-regional innovation cooperation. Regions should take the development of the digital economy as an opportunity to actively build regional collaboration platforms, form regional innovation and industrial chains with a rational layout and close synergy, and mobilise the efficient flow of market factors to better exploit the innovation potential brought about by the development of the digital economy.

Acknowledgments

This work is supported by the 2022 undergraduate scientific research and innovation fund project of Anhui University of Finance and economics, "*Research on the mechanism and path to achieve common prosperity in the digital economy*" (XSKY22001ZD).

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