Research on the Measurement of China's New Retail Development and the Characteristics

Kejuan Xie

School of Economics, Huazhong University of Science and Technology, Wuhan 430074, Hubei, China

Abstract: This paper aims to construct an indicator system revealing the level of new retail development, and uses the 2015-2021 Chinese provincial panel data to explore the current situation of new retail development in China. The study finds that: the level of China's new retail development has gradually increased in 2015-2021, but there has significant heterogeneity between different regions. The overall trend is a high level of new retail development in the East and a low level in the West. Based on this, this paper also makes corresponding recommendations.

***Keywords*:** new retail; regional disparities; indicator systems

1. Introduction

Under the background of digital economy, technological innovation and model innovation have promoted the transformation of traditional retail into new retail, and the deep integration of online and offline retail and smart logistics have made new retail gradually become an important force for expanding domestic demand and boosting the economy. As new retail continues to innovate with the rapid development of the economy and society, there is no exact definition of new retail in the industry or academia. Based on the definitions provided by scholars[1-2], this paper defines New Retail as a new model of retailing that deeply integrates online and offline retailing and intelligent logistics.

New retail has become an important factor in promoting consumption. This paper aims to construct a comprehensive indicator system, establish a new retail development index reflecting the level of new retail development, and use China's provincial panel data to study the current level of new retail development in China. This paper makes up for the shortcomings of previous research on the indicator system and measurement methods, and helps to comprehensively recognize the current situation of new retail development and its spatio-temporal development trend.

2. New retail indicator system construction

2.1 Indicator system

As new retail is still developing rapidly and its content is both extensive and complex, there is still no unified accounting system to measure its development level, and relevant statistics are seriously lacking. Based on the digital economy indicator system constructed by Wang Jun et al. [3]and Liu Jun et al. [4], this paper designs indicators to measure the development level of new retail from four aspects, namely, new retail technology development, mobile payment, logistics and output scale, and a total of 10 sub-indicators are selected, as shown in Table 1.

Table 1. Indicator system of the new retail development index

First level indicator	Second level indicator	Third level indicator
New Retail Development Index(NRDI)	New Retail Technology Development Index (NRTDI)	Percentage of Information Technology Employees (%)
		Growth rate of investment in information technology fixed assets (%)
		Percentage of companies with e-commerce trading activities (%)
	Mobile Payment Development Index (MPDI)	Mobile Internet penetration (%)
		Digital Payments Index
		Mobile penetration rate (units/100 people)
	Logistics Development Index (LDI)	Percentage of Express Revenue (%)
		Courier operations per capita (pieces/person)
	New Retail Output Scale Index (NROSI)	Online retail sales per capita (million yuan per person)
		Offline retail sales per capita (million yuan per person)

2.2 Indicator measurement

In order to eliminate the influence of scale, own variation of the variable and the size of the value, the threshold method is used to standardize the data. Referring to the idea of constructing the Informatization Level Index (ILI) established by Zhang Bin et al. [5], the year 2015 is taken as the base period and is standardized according to formula (1):

$$X_{it} = \frac{V_{it} - V_{min0}}{V_{max0} - V_{min0}} \times 6 + 1 \tag{1}$$

where t represents the year of the measure, and V_{max0} and V_{min0} are the maximum and minimum values of the raw data in the base year.

In order to obtain a robust new retail development index for each province, this paper synthesizes the ideas of the NBI index weighting method, the entropy weighting method, and the CRITIC method, and uses the average of the weights measured by these three methods as the final weights of each of the above indicators.

Due to the limitation of data availability, this paper selects 2015-2021 as the measurement period. Data sources include "China Statistical Yearbook", "China Internet Statistical Report", "China Electronic Information Industry Statistical Yearbook" and "China Labor Statistical Yearbook".

3. Analysis of measurement results

3.1 National level

In terms of the overall development trend, China's new retail development level increased steadily during 2015-2021, with an average annual growth rate of 11.56%. In terms of sub-indexes, the LDI and MPDI developed faster, with average annual growth rates of 21.43% and 14.65%. On the other hand, the NROSI and the NRTDI grew more steadily. In terms of the annual average index of each province, there is a wide gap between the development levels of new retail in different provinces. Shanghai, Beijing, Zhejiang and Guangdong leading the way compared to other regions. China's new retail development is still facing a huge "polarization effect", and the "wealth gap" of new retail is polarized, with most regions having relatively low levels of new retail development. At the same time, there is an obvious "Matthew effect" in China's inter-regional new retail development. Regions with good new retail development conditions are developing faster, which will further widen the level of inter-regional new retail development.

3.2 Regional level

From the perspective of the main index and the average value of the sub-indexes, the NRI of all regions show a significant incremental trend during 2015-2021, and the eastern region is far ahead, the central region is second, and the western region is last. The possible reason for this is that the eastern region has a higher level of economic development, scientific and technological innovation capacity, and infrastructure construction, which gives it a greater advantage in new retail development. On the other hand, in the western region, the basic conditions for new retail development are weaker, and the corresponding resources flow to the eastern region, thus exacerbating the "Matthew effect".

4. Conclusion and recommendations

This paper innovatively constructs a new retail development level indicator system, and finds that China's new retail development level gradually increased during 2015-2021, with the eastern region leading the push for vigorous new retail development, followed by the central region, and the western region catching up.

Therefore, this paper proposes to improve the new retail development environment in backward areas to narrow the "digital divide". According to local conditions, we should formulate support policies for different regions that suit local characteristics and make full use of regional advantages. By focusing on optimizing the new business environment, transforming the industrial structure and improving the digital infrastructure in the more backward cities, we can consolidate the foundation for new retail development and alleviate the phenomenon of excessive regional new retail gap.

References

[1] Du Ruiyun, Wang Baoyi. New retailing: a Research Review and Outlook [J]. Enterprise Economy, 2020, 39(8): 128-135.

[2] Ailawadi K L, Farris P W. Managing Multi- and Omni-Channel Distribution: Metrics and Research Directions[J]. Jour-

nal of Retailing, 2017, 93(1): 120-135.
[3] Wang Jun, Zhu Jie, Luo Xi. Research on the Measurement of China's Digital Economy Development and the Characteristics[J]. The Journal of Quantitative & Technical Economics, 2021, 38(7): 26-42.
[4] Liu Jun, Yang Yuanjun, Zhang Sanfeng. Research on the Measurement and Driving Factors of China's Digital Economy[J]. Shanghai Economic Review, 2020(6): 81-96.
[5] Zhang Bin, Peng Zhidao, Zhao lei et al. Research on the International Comparative of China's Informatization Development [J]. Information Systems Engineering, 2017(6): 122-125.

Author Bio

Name: Xie Kejuan; date of birth: December 1999; gender: female; education: Master degree; nationality: Han; Native place: Huzhou City, Zhejiang Province; Institution/School: Huazhong University of Science and Technology; Research direction: Regional Economics; Zip code: 430074.