

Impact of the Digital Economy on Rural Labor Mobility: A Data Analysis Based on the National Migrant Worker Monitoring Survey Reports (2015-2023)

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Abstract. Based on data from the National Migrant Worker Monitoring Survey Reports (2015-2023), this paper investigated the impact of the digital economy on rural labor mobility. Results indicate that the digital economy has significantly transformed the traditional mobility patterns. In terms of scale, the proportion of migrant workers moving across provinces decreased from 45.9% to 38.2%, which indicated a stronger preference for employment within provinces; In sectoral structure, employment in the tertiary sector continued to rise, reaching 53.8%, with steady growth in digital-related industries, such as wholesale, retail and transportation; In relation to income, the average monthly income of migrant workers increased at an annual rate of approximately 5.5%, with faster growth in local employment and a narrowing regional income gap. By creating local employment opportunities, reducing information barriers, and optimizing resource allocation, the digital economy has facilitated the localization, diversification, servitization of labor mobility, and provided new pathways for urban-rural integration and regional coordinated development.

Keywords: Digital economy, Rural labor mobility, Employment Structure

1. Introduction

Since the reform and opening-up, rural labor mobility in China has gradually formed a traditional pattern characterized by the mass migration of migrant workers, which featured large-scale, cross-regional movement from rural areas in central and western regions to manufacturing hubs in eastern coastal areas [1]. This traditional model greatly contributed to industrialization and urbanization in coastal regions, provided abundant labor resources for sustained high-speed economic growth, and facilitated industrial restructuring and upgrading. However, this mobility pattern also had some drawbacks, such as the long-term semi-urbanized status of migrant workers, which limited their access to urban public services. Additionally, the large-scale outmigration of rural laborers led to family separation, resulting in issues such as left-behind children and the elderly, thereby affecting rural social stability and development. Some researchers have pointed out that although this model unleashed demographic dividends during a specific historical period, its sustainability is now facing challenges [2].

With the development of the digital economy, driven by institutional support, human capital, and information technology, rural labor mobility is undergoing a profound transformation, presenting new trends in the existing mobility landscape. Based on the integrated urban-rural health insurance initiative, Ye and Zhu found that rural labor mobility within counties increased by 6.9%, though the impact on cross-provincial mobility was not significant [3-4]. Xing highlighted that educational expansion boosted rural higher education rates, thereby increasing migration willingness and range, especially among unmarried, highly educated individuals who showed a stronger tendency toward inter-city and inter-provincial mobility [5]. Further, Zhang and Yang emphasized that internet penetration promotes diversified labor mobility by reducing information barriers, broadening employment channels, and fostering e-commerce development, though it is constrained by disparities in infrastructure and digital skills [6-7]. He further highlighted that interregional shifts in manufacturing significantly promoted the return of rural labor to central and western regions by increasing employment opportunities and income surplus, with employment opportunities playing a stronger role than income growth [8]. These studies attest to the evolving dynamics and emergent patterns of rural labor mobility in the digital economy era.

The digital economy is a new economic form shaped by data as a key production factor, information networks as carriers, and information technology as the driving force, encompasses both industrial digitization and digital industrialization. Research has shown that the development of the digital economy has spawned new business models such as e-commerce, live streaming, and ride-hailing, significantly broken the temporal and spatial constraints of traditional employment and created numerous flexible jobs [9-10]. These emerging sectors provide new non-agricultural employment avenues for rural laborers, effectively promoting the integration of urban and rural labor markets [11]. By lowering barriers to entrepreneurship and expanding income sources, the digital economy not only complements traditional employment forms but also drives the restructuring and diversification of employment, significantly enhancing the inclusivity and diversity of the labor market [12]. Furthermore, the proliferation of digital technology in rural areas, particularly the promotion of e-commerce, has played a key role in increasing residents' income and local employment opportunities, attracting some migrant workers to return and contributing to urban-rural integration and rural revitalization strategies [13].

Therefore, based on data from the National Migrant Worker Monitoring Survey Reports, this paper will investigate the impact of the digital economy on the scale, direction, and structure of rural labor mobility, aiming to reveal the role of digitization in guiding rational labor allocation and providing objective analysis and decision-making references for promoting urban-rural integration and regional coordinated development.

2. Mechanisms of the digital economy's impact on rural labor mobility

By reshaping rural industrial forms and employment patterns, the digital economy has profoundly altered the mobility decisions and pathways of rural laborers. Its impact mechanisms are primarily reflected in two aspects: regulating the scale of mobility and reshaping the direction of mobility.

2.1. Impact on mobility scale

The digital economy significantly curbs the outflow of rural labor, primarily by creating abundant inward absorption employment opportunities through the development of local digital industries. On the one hand, the rapid growth of rural e-commerce and the improvement of county-level logistics systems have directly absorbed a large number of laborers into roles such as e-commerce operations,

courier delivery, and product processing, enabling workers to leave the land without leaving their hometowns. On the other hand, platform economy-based emerging professions such as ride-hailing drivers, food delivery riders, and community services have created numerous flexible jobs at both urban and county levels, reducing rural laborers' absolute reliance on outbound migration, particularly across provinces.

2.2. Reshaping the direction of mobility

Beyond affecting the scale of mobility, the digital economy further structurally reshapes the direction of rural labor mobility, facilitating a shift from one-way outflow to diversified return. This reshaping mechanism is mainly evident in two dimensions: first, in terms of geographical direction, the development of the county-level digital economy (such as, digital industrial parks, live streaming bases, and smart agriculture) offers attractive salaries and development prospects, encouraging some laborers who would have migrated to large eastern coastal cities to instead return to their home regions or seek urbanization within their provinces, resulting in a shift from cross-provincial mobility to local employment. Second, in terms of sectoral direction, the development of the digital economy has generated numerous local living services and digital service jobs, guiding laborers to transition from traditional labor-intensive industries such as manufacturing and construction to consumer service sectors such as retail, accommodation and catering, transportation, and storage/postal services.

3. Data analysis

To empirically analyze the impact of the digital economy on rural labor mobility, this study downloaded the National Migrant Worker Monitoring Survey Reports (2015-2023) from the National Bureau of Statistics website and extracted the following core indicators for quantitative analysis and empirical research. The core indicators mainly include: total number of migrant workers, migrant workers working outside their home towns, local migrant workers, cross-province migrant workers, proportion of cross-province mobility, proportion of within-province mobility, employment share in the tertiary sector, employment share in manufacturing, employment share in wholesale and retail, employment share in transportation, storage, and postal services, average monthly income of migrant workers, average monthly income of migrant workers working outside their home towns, and average monthly income of local migrant workers. Detailed core indicator data are shown in Table 1.

Table 1. Summary of core indicators from the national migrant worker monitoring survey reports (2015-2023) [14]

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Migrant Workers (10k)	27747	28171	28652	28836	29077	28560	29251	29562	29753
Non-local Migrant Workers (10k)	16884	16934	17185	17266	17425	16959	17172	17190	17658
Local Migrant Workers (10k)	10863	11237	11467	11570	11652	11601	12079	12372	12095
Cross-province Migrant Workers (10k)	7745	7666	7675	7594	7508	7052	7130	7061	6751
Cross-province Mobility (%)	45.9	45.3	44.7	44.0	43.1	41.6	41.5	41.1	38.2
Within-province Mobility (%)	54.1	54.7	55.3	56.0	56.9	58.4	58.5	58.9	61.8
Tertiary Sector Employment (%)	44.5	46.7	48.0	50.5	51.0	51.5	50.9	51.7	53.8
Manufacturing Employment (%)	31.1	30.5	29.9	27.9	27.4	27.3	27.1	27.4	27.5
Wholesale and Retail Employment (%)	11.9	12.3	12.3	12.1	12.0	12.2	12.1	12.5	13.2
Transportation/Postal Employment (%)	6.4	6.4	6.6	6.6	6.9	6.9	6.9	6.8	7.1
Average Monthly Income (RMB)	3072	3275	3485	3721	3962	4072	4432	4615	4780
Non-local Worker Income (RMB)	3359	3572	3805	4107	4427	4549	5013	5240	5441
Local Worker Income (RMB)	2781	2985	3173	3340	3500	3606	3878	4026	4131

Meanwhile, to more intuitively illustrate the trends in the core indicators from the National Migrant Worker Monitoring Survey Reports, we have created detailed trend charts of the core indicator data, as shown in Figure 1-3.

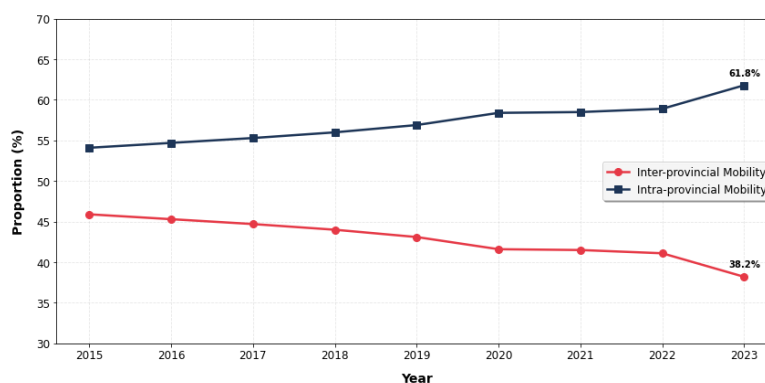


Figure 1. Trends in population mobility patterns (2015-2023)

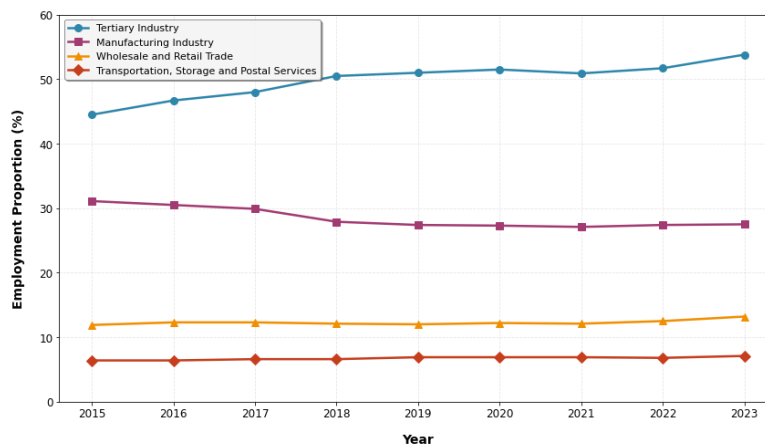


Figure 2. Trends in sectoral employment distribution (2015-2023)

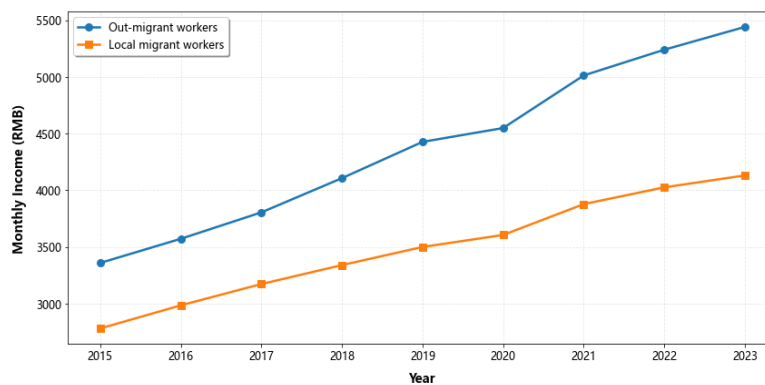


Figure 3. Trends in monthly income of migrant workers (2015-2023)

As shown in Table 1 and Figure 1-3, the impact of the digital economy on rural labor mobility is mainly reflected in the following aspects:

(1) Changes in Mobility Structure: From 2015 to 2023, the number of migrant workers moving across provinces gradually decreased from 77.45 million to 67.51 million, with their share among migrant workers working outside their home towns dropping from 45.9% to 38.2%. During the same period, the proportion of within-province mobility continued to rise from 54.1% to 61.8%. The total number of migrant workers working outside their hometowns increased from 168.84 million to 176.58 million, while the number of local migrant workers grew from 108.63 million to 120.95 million, peaking at 123.72 million in 2022. This structural shift reflects a growing preference for employment within provinces, likely due to the rapid development of the county-level economy, especially digital economy-related sectors such as e-commerce, local life services, and logistics, which have created more local job opportunities. This has reduced the proportion of cross-province employment and enhanced regional balance in the labor market.

(2) Transformation of Sectoral Structure: The tertiary sector has become the main channel for employing migrant workers, with its share significantly increasing from 44.5% in 2015 to 53.8% in 2023. Meanwhile, the employment share in manufacturing declined from 31.1% to 27.5%, indicating a shift toward a service-oriented employment structure. The employment shares in wholesale and retail trade and in transportation, storage, and postal services sectors, which are closely related to the digital economy, also showed steady growth, rising from 11.9% to 13.2% and

from 6.4% to 7.1%, respectively. This suggests that new business models driven by digital technology are reshaping the employment landscape for labor.

(3) Income Growth and Changing Disparities: The average monthly income of migrant workers increased from RMB 3,072 in 2015 to RMB 4,780 in 2023, with an average annual growth rate of approximately 5.5%, indicating sustained improvement in income levels. The monthly income of migrant workers working outside their hometowns remained higher than that of local migrant workers, with the absolute gap widening from RMB 578 to RMB 1,310, reflecting a persistent income premium for cross-regional employment. However, it is worth noting that the income growth of local migrant workers has accelerated in recent years, indicating an improving quality of local employment and suggesting that the digital economy has positive potential for narrowing urban-rural and regional income disparities.

4. Discussion and policy recommendations

Data from the National Migrant Worker Monitoring Survey Reports (2015-2023) reveal that the digital economy has significantly reduced the proportion of rural laborers moving across provinces (from 45.9% to 38.2%) and driven a continuous increase in the employment share of the tertiary sector (from 44.5% to 53.8%) by creating local jobs, reshaping labor mobility patterns, and optimizing regional population distribution. However, new forms of employment have also exposed prominent issues such as the lack of social security coverage for flexible workers, particularly insufficient insurance for workplace injuries and pensions. Surveys indicate that while groups such as delivery riders have a psychological expectation of contributing RMB 340-500 per month toward social insurance, the actual cost often ranges from RMB 600 to 1,000, leading to low participation rates.

Accordingly, the following policy recommendations are proposed: First, strengthen digital skills training in rural areas by promoting Chongqing's integrated model of job demand-training-assessment-employment. This model should provide practical training (with hands-on training accounting for $\geq 60\%$ of total hours) in e-commerce, live streaming, ride-hailing, and other fields for rural laborers transitioning to new jobs, coupled with follow-up employment services to improve the training-to-employment conversion rate. Second, improve the protection of labor rights in new forms of employment by expanding pilot programs for occupational injury protection and promoting a platform-government co-subsidy insurance model (such as Meituan's local pilot providing subsidies based on 50% of the contribution base). Simultaneously, explore mechanisms for portable social security benefits across provinces to address the social insurance continuity issues faced by highly mobile workers and avoid coverage gaps.

5. Conclusion

Based on national migrant worker monitoring data from 2015 to 2023, this paper investigated the impact of the digital economy on rural labor mobility. The results show that the digital economy has significantly transformed traditional mobility patterns: in terms of scale, from large-scale outflow to localized employment; in terms of direction, from one-way cross-province mobility to diversified return and nearby employment; and in terms of structure, from manufacturing-dominated to diversified services. This shift is attributed to the local jobs created by the digital economy, reduced information barriers, and steadily increasing income levels (with average monthly income growing at approximately 5.5% per year), thereby optimizing urban-rural population distribution and alleviating pressure on large cities. This study provides empirical evidence for labor mobility

policies in the digital economy era. A limitation of the research is the lack of in-depth discussion on regional digital divides and the protection mechanisms for workers' rights in new employment forms. Future studies could further examine the impact of regional disparities in digital infrastructure and pathways toward nationwide social security coordination, offering more comprehensive policy references for integrated urban-rural development.

References

- [1] Zhang Guangsheng, Tian Zhouyu. China's Rural Labor Mobility in the 40 Years of Reform and Opening-up: Changes, Contributions and Prospects [J]. *Journal of Agricultural Economics*, 2018, (07): 23-35.
- [2] Mao Sihan. The study of China's rural labor flow employment policy since reform and opening [D]. Chengdu: Sichuan Agricultural University, 2024: 1-87.
- [3] Ye Hui, Zhang Cong. Impact of integrated medical insurance system on rural labor mobility [J]. *Chinese Rural Health Service Administration*, 2025, 45(05): 347-353.
- [4] Zhu Yiwei, Shen Shuguang. The Impact of Medical Treatment Direct Settlement in Different Locations on Rural Labor Force Mobility [J]. *Contemporary Finance and Economics*, 2025, (05): 30-43.
- [5] Xing Chunbing, Zhang Xiaomin. Impact of Education Expansion on Rural Labor Mobility [J]. *Journal of Zhejiang Gong Shang University*, 2023, (04): 88-100.
- [6] ZHANG Jinpeng. Analysis of Factors Influencing Rural Labor Mobility in Shanxi Province under the Internet Background [J]. *Shanxi Agricultural Economy*, 2024, (06): 62-66.
- [7] Yang Yuqi. Research on the Impact of Social Networks on Rural Labor Mobility [D]. Xianyang: Northwest A&F University, 2025: 1-69.
- [8] He Xinyue. Research on the influence of interregional manufacturing transfer on rural labor flow [D]. Hangzhou: Zhejiang Provincial Party School of the CPC, 2023: 1-63.
- [9] LI Jun, SHU Jijun. Research on the Impact of Digital Economy on Urban-Rural Integration from the Perspective of Factor Flow [J]. *Science and Technology and Economy*, 2023, 36(06): 16-20.
- [10] Qian Li, Sun Fang. Impact of Digital Economy on Integrative Urban and Rural Development: Empirical Test Based on Mediation Effect Model [J]. *Journal of Jiangnan University (Social Science Edition)*, 2023, 40(01): 58-70.
- [11] Xin Jinguo, Ma Shuaixi. Research on the Spatial Spillover and Threshold Effect of the Digital Economy on the Urban-Rural Integration-A Case Study of Zhejiang Province [J]. *The World of Survey and Research*, 2022, (08): 67-77.
- [12] Chen Chen. The Impact of Digital Inclusive Financial Development on Rural Labor Mobility [D]. Kunming: Yunnan University of Finance and Economics, 2024: 1-88.
- [13] Zheng Jin. The effect of e-commerce development on rural labor migration [D]. Beijing: Central University of Finance and Economics, 2023: 1-49.
- [14] National Bureau of Statistics of China. National Migrant worker monitoring survey reports 2015-2023 [Data report]. 2024, 5. http://www.stats.gov.cn/english/PressRelease/202404/t20240430_1949230.html.