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Industrial Structure and Employment Structure: Employment in Rural Areas of Western China

Yao Wenyan[1,2], Mohd Anuar Arshad[2]*

[1] College of Business, Nanning University, Longting road No.8, Guangxi, China, [2]School of Management, University Sains Malaysia, Penang 11800, Malaysia

Email: yaowenyan@unn.edu.cn, anuar_arshad@usm.my

Corresponding Author Email: anuar_arshad@usm.my

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Abstract

Fostering rural economic development is imperative for ensuring sustainable growth in rural areas. Currently, China is vigorously promoting the implementation of the Rural Revitalization Strategy to foster robust rural economic growth. As a key productive resource, labor will inevitably undergo shifts across various industries under the impetus of the Rural Revitalization Strategy. Although significant progress has been made in China's western regions in recent years, there remains a substantial development gap compared to the central and eastern regions. In the process of advancing the Rural Revitalization Strategy, how to achieve effective labor transfer, promote employment and increase farmers' incomes has become a critical issue for the economic development of rural areas in the western regions. Based on this, this study takes economic data from Guangxi in China's western region from 2012 to 2021 as a sample to conduct an in-depth analysis of the industrial structure, employment structure, and their adaptability in Guangxi. The study finds that there is a surplus of labor in the primary industry in Guangxi that needs to be transferred, while the labor allocation efficiency in the secondary and tertiary industries is relatively high, with a clear demand for labor. Given the economic development status of Guangxi, it is recommended to promote agricultural industrialization, foster urban-rural integration, actively develop the secondary and tertiary industries, and simultaneously strengthen targeted training for agricultural labor and emphasize rural education. These recommendations will help provide effective support for the sustainable economic development of rural areas in the western regions.

Keywords: Rural Areas, Employment Structure, Industrial Structure, Sustainable Development

Introduction

The industrial structure is closely related to the employment composition. Research indicates that the industrial composition of an organization or region significantly in-fluences its employment structure and overall economic development (Chen ＆Ma, 2022). Currently,

China is comprehensively advancing the rural revitalization strategy, aiming to foster the development of rural economies. The government first introduced the "rural revitaliza-tion" strategy in the 19th National Congress report, considering it a crucial component of the modern economic system. It reiterated the importance of addressing the issues related to the "three rural issues" (agriculture, rural areas, and farmers) as the top priority in the party's agenda. The formulation of the rural revitalization strategy provides a clear path and direction for the modernization of agriculture and rural areas, serving as a primary guiding principle for current agricultural and rural development efforts. Among the five key requirements for implementing the rural revitalization, the prosperity of industries serves as the cornerstone. To solidify this foundation, it is imperative to break through the long-standing dualistic structure hindering urban-rural integration. Agri-cultural supply-side reform should be the main focus, guiding and facilitating the flow of capital, technology, and talent to agricultural and rural areas, thereby achieving com-prehensive urban-rural integration. The integration of urban and rural development is not just about combining industry and agriculture, merging urban and rural areas, but also about the integration of urban and rural residents. To achieve such integration, it is es-sential to drive the transformation and upgrading of industries, a transformation that inevitably leads to the migration of labor between various industries.

Achieving "industrial prosperity" in rural areas requires directing resources such as funds, technology, and labor towards agriculture and rural areas. This involves expand-ing and extending agricultural industry chains and value chains, thereby stimulating the vitality of production factors (Gazetdinov et al., 2023). The coordination between industrial structure and em-ployment structure plays a crucial role in guiding the reconfiguration of resources among different industries (Gu et al., 2022). Research from South Korea suggests that a lower level of indus-trial diversification, or a concentration of industrial structure, is more conducive to driving economic development in rural areas. However, some rural areas may possess unique advantages, with a higher level of industrial diversification or a dispersed in-dustrial structure, which is more favorable for regional economic development (Qu et al., 2022). Re-search in China indicates that compared to the primary industry, the secondary and ter-tiary industries have a more balanced level of output value and employment structure . Studies in Vietnam, on the other hand, suggest that from 1995 to 2013, the coordination between industrial structure and employment structure remained in an imbalanced state, overall exhibiting a poor level of coordination (Zhou et al., 2023).

For China, the primary labor force in rural areas is comprised of farmers. The central goal of rural revitalization is to achieve prosperity for farmers, with farmers being the key agents in realizing this objective. To attain this goal, it is imperative to enhance the in-volvement of agricultural labor in the development of agricultural industries. Focused efforts must be directed towards addressing employment issues for farmers, thereby promoting increased income for them (Li et al.,2023). Many areas in the western regions are rural, and while significant progress has been made in recent years with the implementation of the national Western Development Strategy, these regions still exhibit distinct character-istics in terms of geographical location, infrastructure conditions, and overall labor quality when compared to the central and eastern regions (Wang et al.,2020). Therefore, the critical question is how to propel the transformation of the employment structure of agricultural labor toward industrial structure, adapting to the development of industrial structure. This is key to achieving increased income for farmers in the western regions.

In this context, this study focuses on Guangxi Zhuang Autonomous Region as the research area, initiating a comprehensive analysis from the perspective of industrial structure deviation. It delves into an in-depth examination of its industrial structure, employment composition, and the adaptability between the two. Ultimately, in conjunc-tion with the objectives of sustainable development, strategies are proposed to optimize the employment issues of rural labor.

Literature Review

The rapid development of economic growth and industrial structural transformation and upgrading has also driven the continuous evolution of theories related to economic growth and industrial structure.

Adam Smith (1776), in "An Inquiry into the Nature and Causes of the Wealth of Nations," discussed the sequence of sectors in industrial development and capital in-vestment, reflecting ideas on industrial development and the evolution of industrial structure. He also emphasized, "The improvement of human capital has a significant positive impact on socio-economic development". Colin Clark (1940), in "Conditions of Economic Progress," further employed statistical analysis and empirical research to confirm the intrinsic relationship between the distribution of employment in the tertiary sector and the structural transformation of the economy. The research found that with the growth of per capita income and socio-economic development, labor in the primary sector would gradually shift to the secondary and tertiary sectors. The renowned American economist William Arthur Lewis reiterated the core issue of dual economic structure development in "Economic Development with Unlimited Supplies of Labour", empha-sizing how labor moves from traditional to modern sectors (Lewis, 1954). William Petty (1969) early on noticed the income disparities between different industries, highlighting trends in the evolution of industrial structure in his influential work "Political Arithmetick." He observed that income in the manufacturing sector surpasses that of the agricultural sector, and the commercial sector surpasses manufacturing. Economist Todaro M.P. pro-posed the Todaro model in "A Model of Labor Migration and Urban Unemployment in Less Developed Countries," suggesting that the decision of agricultural labor to migrate to cities depends not only on the urban-rural income gap but also on urban unemploy-ment conditions. He argued that migration decisions are based on expectations of real income and employment conditions, not current levels (Todaro, 1969). Consequently, he advocated for promoting rural development, vigorously developing the rural economy, narrowing the gap between urban and rural areas, and facilitating the transfer of surplus agricultural labor within industries.

Simon Kuznets (1973), based on actual data from different income groups in various countries, conducted a detailed quantitative analysis of the relationship between per capita output and structural changes from the perspectives of labor structure and sectoral output structure (Kuznets, 1973). He discovered that changes in the labor share of the three major industrial sectors did not entirely align with changes in the share of national income. Subsequently, new methodologies gradually played a role in the study of economic structure.

The aforementioned theories provide a fundamental explanation of the patterns in industrial development and the interlinkages between industrial structure and employ-ment composition. They represent a classical theoretical synthesis within this domain and serve as

pivotal theoretical underpinnings for the research undertaken in this study.

In the past few decades, China's economy has experienced rapid growth, with the industrial scale continuously expanding and the industrial structure undergoing constant optimization. This has attracted numerous scholars to conduct in-depth research, pro-gressing from the early focus on changes in economic structure and the interrelation be-tween industrial structure and employment structure to later quantitative studies on the positioning of industrial economic development. In the early 1980s, people viewed the adjustment and upgrading of industrial structure from the perspective of steady devel-opment (Liu, 1981). Chen Yue (1984) pointed out that the adjustment of industrial structure is driven by science and technology, guided by technological revolution, thereby triggering changes in both industrial structure and labor employment. With the advancement of industrial modernization, about half of the agricultural workforce is expected to shift to other sectors, leading to fundamental changes in employment structure (Hong, 1985). The research achievements of the 1980s mainly comprised qualitative studies based on China's de-velopment practices.

Subsequently, with the further development of the economy, more scholars have turned their attention to the relationship between employment structure and industrial structure, engaging in more profound research. The methods and research subjects have become more diverse. Luo Ruoyu and Zhang Longpeng (2013)conducted a study on the classification of the three major industries, factor intensity, and the method of deviation share. They analyzed the impact of changes in industrial structure on economic growth, revealing that capital-driven economic growth may lead to the discordance between in-dustrial structure and employment structure, as well as the convergence of industrial structure (Luo ＆Zhang, 2013). Zhu Tong and Pang Lei (2015)utilized input-output tables to construct a theoretical model of the synergy between industrial structure and employment, measur-ing the degree of synergy between industrial structure and employment structure (Zhu ＆Pang, 2015).

Simultaneously, scholars have conducted research on different provinces in China, leading to a plethora of research conclusions. In Zhejiang Province, the direction of in-dustrial structure change significantly affects employment (Tan, 2012). Additionally, the direc-tion of industrial structure change in Zhejiang is positively correlated with employment (Tao, 2019). In Hebei Province, through the analysis of employment elasticity, structural devia-tion, and relative labor productivity, it was found that the interactive development of industrial structure and employment structure in Hebei Province is not coordinated. Compared to the national average level, Hebei Province leans more towards the second-ary industry, partly due to the transformation of heavy industry in the Beijing-Tianjin region (Liu & Wang, 2012). Guangdong Province's structural deviation tends to balance, and the indus-trial structure shows a slow upward trend (Zhang et al, 2016). The calculation results of the coupling effect between industrial structure and employment structure in Shandong Province show a significant increase in overall coordination (Xia ＆ Jiao, 2018).

By comparing the coordination of industrial structure and employment structure between Fujian and Taiwan, it was found that the tertiary industry in both regions has strong employment absorption capabilities. However, Taiwan's industrial structure and employment structure coordination is superior to Fujian (Lin et al.,2021). If the perspective is ex-tended to

the national level, the coordinated development of industrial structure and employment structure becomes an important issue (Tran & Doan, 2010). According to Chinese data from 2010 to 2019, the coordination between China's industrial structure and employment structure generally shows a trend of "first suppression and then rise," especially after 2012, the degree of coordination continues to increase (Ji & Basen, 2020).

The aforementioned research on China has primarily focused on the developed provinces in the central and eastern regions. This study will shift its focus to the relatively lagging western regions and aims to explore the relationship between employment structure and industrial structure in rural areas of the western regions within the context of sustainable development.

Materials and Methodology

Sample

The Guangxi Zhuang Autonomous Region (hereinafter referred to as "Guangxi") is located at the southeastern edge of the second terrace of the Yunnan-Guizhou Plateau in China, featuring diverse topography such as mountains, hills, plateaus, and plains. The total administrative land area of the region is 237,600 square kilometers. As of 2021, the permanent population in Guangxi is 50.37 million, with rural residents accounting for 22.63 million, constituting 44.93% of the total population. Guangxi is a multi-ethnic autonomous region with the largest ethnic minority population in the country, compris-ing 37.6% of the permanent population. The region is home to 12 ethnic groups, including the Zhuang, Han, and Yao, with the Zhuang ethnic group constituting 31.4% of the total permanent population. Guangxi is the only coastal autonomous region for ethnic minorities in China and the only coastal area in the western region. It serves as a crucial gateway and frontier for China's opening-up, engagement with ASEAN, and global in-tegration. Positioned as the most convenient maritime gateway in the Greater Southwest, Guangxi has a unique geographical location. Adjacent to the Greater Southwest, bor-dering Guangdong, Hong Kong, and Macau, facing Southeast Asia, it plays a vital role in national strategies such as the Western Land-Sea New Corridor, the Beibu Gulf Urban Agglomeration, and the Pearl River-Xijiang Economic Belt. Additionally, Guangxi is a key hub on the Maritime Silk Road. In the context of the Western Development Strategy and the national opening-up plan, Guangxi holds a distinctive position.As of 2022, Guangxi has achieved a regional gross domestic product (GDP) of 26,300.87 billion yuan, repre-senting a 2.9% increase compared to the previous year.

Data Sources

This article utilizes a decade of data from 2012 to 2021 for Guangxi Province. All data is sourced from the "Statistical Yearbook of Guangxi Zhuang Autonomous Region" and the website of the Guangxi Statistical Bureau. The variables discussed in the text, including GDP and its components, employment population and its composition, GDP index, among others, are all based on officially released data.

Methodology

There are various standardized econometric methods for analyzing the relationship between industrial structure and employment structure (Cui & Medvid, 2022). One commonly used ana-lytical tool is the employment structure deviation. Employment structure deviation refers to the disparity between the share of value-added in a particular industry and the share

of employment in that industry. Through this disparity, one can infer the equilibrium state between the industrial structure and the corresponding employment structure, thereby analyzing whether the industry exhibits a trend of labor inflow or outflow. The formula for its calculation is as follows:

$$P_i = \frac{Y_i}{L_i} - 1 \qquad i=1、2、3 \quad (1)$$

In this formula, Pi represents the deviation degree of the i-th industrial structure, Yi represents the output proportion of the i-th industry, and Li represents the employment proportion of the i-th industry. When Pi is closer to 0, it indicates a more balanced rela-tionship between industrial structure and employment structure. A positive Pi implies that the output proportion of the industry is greater than the employment proportion, reflecting a higher labor productivity. On the other hand, a negative Pi indicates that the output proportion is less than the employment proportion, suggesting lower labor productivity.

Results and Analysis

Industrial Structure and Development Trends

During the period from 2012 to 2021, the gross domestic product (GDP) of Guangxi Zhuang Autonomous Region increased from 13,090.04 billion yuan to 24,740.86 billion yuan, with a growth rate of 89%. The proportion of the primary industry remained rela-tively stable at around 16%, while the secondary industry decreased from 48.03% to 33.09%. In contrast, the tertiary industry increased from 35.37% to 50.68%. It is note-worthy that the proportion of the primary industry remained relatively unchanged, the secondary industry exhibited a declining trend, and the tertiary industry continued to rise, forming an overall distribution trend of "three, two, one." The changing characteristics of this industrial structure indicate that Guangxi's industrial composition is gradually tak-ing on modern features, with a robust momentum in the development of urban service industries and significant achievements in industrial transformation.

Figure 1. Change trend of the proportion of the added value of each industry in the GDP in Guangxi

(According to China Statistical Yearbook (2013-2022)

Employment Structure and Development Trends

During the period from 2012 to 2021, the labor force employment structure in Guangxi underwent changes closely related to the adjustment of the industrial structure. The proportion of labor force employed in the primary industry decreased from 53.50% to 33.10%, while the proportion in the secondary industry increased from 18.80% to 25.90%. Simultaneously, the proportion in the tertiary industry rose from 27.70% to 41.00%. This shift resulted in a transformation of the employment structure from the original "one, three, two" distribution to the current "three, one, two" distribution. According to the China Statistical Yearbook (2013-2022), data indicates that the employment proportion of rural labor force in Guangxi decreased from 77.8% to 46.58% during this period. This decline can be attributed, in part, to the reduction in the total registered population and, on the other hand, to the implementation of the national urbanization strategy, leading to the migration of a portion of the rural population to urban areas (Ge et al.,2020). Nevertheless, rural labor force still constitutes a significant proportion, accounting for 46.58% of the total employment.

Table 1
Distribution of labor force employment in Guangxi from 2012 to 2021 (10,000 people)

Year	Total Employ-ment	Rural employ-ment	Percentage of Rural Employment in Total Employment (%)	Percentage of Primary Employment in Total Employment (%)	Percentage of Secondary Employment in Total Employment (%)	Percentage of Tertiary Employment in Total Employment (%)
2012	2768	2133.53	77.08%	53.50%	18.80%	27.70%
2013	2782	2081.33	74.81%	53.10%	19.00%	27.90%
2014	2795	2050.6	73.37%	51.90%	19.30%	28.80%
2015	2595	1809.09	69.71%	50.00%	19.10%	30.90%
2016	2583	1681.83	65.11%	46.70%	20.40%	32.90%
2017	2566	1648.99	64.26%	43.30%	21.60%	35.10%
2018	2562	1433.62	55.95%	40.00%	23.30%	36.70%
2019	2558	1367.34	53.45%	37.20%	24.40%	38.40%
2020	2558	1219.00	47.65%	33.90%	25.60%	40.50%
2021	2544	1185.00	46.58%	33.10%	25.90%	41.00%

* Data source: According to China Statistical Yearbook (2013-2022)

Measurement and Analysis of Employment Structure Deviation

According to the calculation based on the value proportion of the three industries and the employment structure in Guangxi from 2012 to 2021, the industrial structure deviation of the three industries in Guangxi during this period was obtained. Table 2 reveals that the industrial structure deviation of the first industry in Guangxi is consist-ently negative, indicating a relatively low labor productivity in this sector and a surplus of labor force. The second industry shows a significant positive industrial structure de-viation, suggesting high efficiency in labor allocation. Combining this with the trend in Table 1, it implies a continued demand for labor force transfer into the second industry. The industrial structure deviation of the third industry remains between 0.24 and 0.50, indicating a relatively high labor productivity. By examining the data in Figure 1 and Table 1 together, it can be observed that both the value proportion and employment proportion of the third industry are gradually increasing.

Table 2
The degree of industrial structure deviation of the three industries in Guangxi

Years	Primary industry	Secondary industry	Tertiary industry
2012	-0.69	1.55	0.28
2013	-0.70	1.46	0.34
2014	-0.70	1.43	0.31
2015	-0.65	0.90	0.50
2016	-0.63	0.71	0.46
2017	-0.63	0.59	0.41
2018	-0.62	0.46	0.38
2019	-0.57	0.36	0.32
2020	-0.51	0.24	0.28
2021	-0.51	0.28	0.24

* Data source: According to China Statistical Yearbook (2013-2022)

Discussion

The Productivity of the Primary Industry is Relatively Low, Resulting in a Surplus of Labor Force

From the data perspective, taking 2012 as an example, the employment share of la-bor in the primary industry was 53.50% of total employment, but it only contributed to 16.60% of the total output. By 2021, although the share of employment in the primary industry had dropped to 33.10% of the total labor force, its output accounted for only 16.23% of the total output. The industrial structure deviation from 2012 to 2021 ranged from -0.5 to -0.7, reflecting the relatively low labor productivity in the primary industry and the existence of a surplus labor force. Through on-site investigations in rural areas of Guangxi, it was found that labor force migration in rural areas faces significant obstacles, with the quality of labor being a crucial factor, particularly in terms of education and professional skills. The survey also revealed that the remaining labor force staying in rural areas mainly holds educational qualifications at the level of junior high school and elementary school. Simultaneously, they lack certain professional skills or technical ex-pertise, making it challenging for them to undertake jobs in the secondary and tertiary industries. Consequently, they are forced to remain in rural areas, occasionally engaging in sporadic and low-quality labor demand, effectively not breaking away from the pri-mary industry.

The Labor Allocation Efficiency in the Secondary Industry is Relatively High, but Labor Migration Encounters Certain Difficulties

In recent years, Guangxi has consistently focused on the development of the sec-ondary industry, especially the positive momentum in the development of state-owned and shareholding enterprises. From 2012 to 2021, the contribution of the secondary in-dustry to the gross domestic product (GDP) decreased from 48.03% to 33.09%. However, the value added in the industry increased from 6287.19 billion yuan to 8187.9 billion yuan during this period. The employment ratio also rose from 18.80% to 25.90%. The positive and relatively large values of the industry structure deviation indicate its high labor productivity and demand for labor force influx. However, modern manufacturing, unlike traditional manufacturing, has reduced its demand for labor-intensive work due to high levels of automation and intelligence. It has exerted a strong substitutive effect on basic labor. Additionally, modern industrial enterprises have relatively high requirements for technical skills, raising the employment

threshold. During on-site investigations, it was observed that individuals born in the 1980s, 1990s, and 2000s tended to avoid employ-ment in manufacturing and factory-related industries. This has led to a situation where middle-aged workers lack the ability to enter the industry, while younger workers are unwilling to do so. Consequently, some industrial enterprises and industrial parks are facing difficulties in recruiting workers, with some large enterprises seeking assistance from government agencies in employee recruitment.

The Tertiary Industry has a Relatively high Labor Productivity, with a Significant Demand for Labor and Ongoing Requirements for Labor Influx

With the gradual implementation of urbanization and rural revitalization strategies, Guangxi's economy has experienced rapid growth, leading to significant development in the tertiary industry. The added value of the tertiary industry increased from 4630.48 billion yuan in 2012 to 12537.45 billion yuan in 2021, and its contribution to the overall GDP rose from 35.37% to 50.68%. The proportion of employment in the tertiary industry increased from 27.70% in 2012 to 41.00% in 2021. However, when examining the indus-try's structural deviation, it reached its peak at 0.5 in 2015 and steadily declined to 0.24 in 2021. Analyzing the data and its trends reveals that the tertiary industry exhibits rela-tively high labor productivity, attracting a substantial workforce with ongoing demand for labor force inflow. The development of the tertiary industry in Guangxi is still in its early stages, offering considerable room for growth. Furthermore, as consumer spending gradually rises and consumption services continue to upgrade, the tertiary industry im-poses higher requirements on the qualifications and skills of the workforce, making it challenging for some rural labor to enter this sector.

Conclusion

Research Conclusions

This study aims to delve into the interrelationship between the industrial structure and employment structure in Guangxi. Through a detailed analysis of the industrial structure deviation, it convincingly confirms the effectiveness of Guangxi's industrial structure upgrading from 2012 to 2021 and the changing trends in the labor force em-ployment structure. These changes align with the general patterns of industrial and em-ployment structure development. Overall, Guangxi's rapid development in the third industry has driven the trans-formation of the employment structure. However, there are varying degrees of structural deviations among the three industries, resulting in a relatively poor coordination between industrial and employment structures. This is primarily due to the current inconsistency in the labor market supply and demand. These research findings also shed light on some characteristics of the current employment situation in China. It is hoped that these dis-coveries will assist the human resources and employment departments in formulating better employment policies to achieve full labor force participation.

Research Contributions Management Implication

The interactive mechanism between industrial structure and employment structure is of paramount significance for the development of any economy. This study, by examining the deviation between industrial structure and employment structure in rural Guangxi under the context of rural revitalization, provides both theoretical and practical contributions. Theoretically, it enriches the existing literature on the relationship between industrial upgrading and labor reallocation, particularly in the context of rural transformation and

urban-rural integration. By applying the analytical framework of structure-employment deviation, the study advances the understanding of structural mismatches in regional labor markets and contributes to the theoretical development of human resource allocation and labor mobility in rural areas. Practically, the findings offer empirical evidence for local governments to formulate targeted industrial development strategies, promote the effective transfer of surplus rural labor, and enhance the level of urban-rural integration. In particular, against the backdrop of insufficient institutional mechanisms for the bidirectional flow of urban and rural factors, the study's policy recommendations provide actionable insights for improving the efficiency of rural human resource deployment and promoting sustainable rural economic development.

Based on the calculated results of industrial structure deviation and findings from on-site investigations, this paper puts forth the following recommendations: First, promote agricultural industrialization and advance urban-rural integration. The urbanization of Guangxi is relatively slow, the degree of urban-rural integration is low, and there is room for improvement in agricultural industrialization. Therefore, natural resources such as land should be utilized to establish a land transfer mechanism, promote the large-scale, intensive, and industrialized development of agriculture, increase agricultural output value, achieve local transfer of surplus rural labor, and increase farmers' income.Second, it is also necessary to vigorously develop the secondary and tertiary industries. Combining Guangxi's geographical advantages, develop agricultural product processing, e-commerce, rural tourism, and other industries to optimize the industrial structure and increase non-agricultural employment opportunities. At the same time, through policies such as entrepreneurial funds and tax incentives, attract college graduates and experienced migrant workers to return to their hometowns for entrepreneurship and employment, promoting rural economic development.Finally, strengthen agricultural labor training and emphasize rural education. According to the needs of industrialization, provide training in planting and breeding to cultivate new-type professional farmers and enhance the technological level of farming and breeding. For laborers aspiring to engage in secondary and tertiary industries, provide vocational skills training to improve their employability. Meanwhile, emphasize the education of school-age children in rural areas to lay a solid foundation for future labor resources.

Limitations and Future Study

This study still has some limitations. The main issue lies in the relatively short du-ration of the selected panel data, covering only a decade from 2012 to 2021. This period may not comprehensively capture the dynamic changes in the relationship between in-dustrial structure and employment structure. Additionally, the data used is based on certain underlying assumptions, which may overlook spillover effects among provinces. Therefore, in future research, it is essential to expand the scope of data sources and conduct comparative analyses between various provinces in China, as well as in-ter-regional linkage analyses. Such research endeavors are likely to yield a more com-prehensive and in-depth understanding.

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References

Chen, D., & Yong, M. (2022). Effect of industrial structure on urban–rural income inequality in China. *China Agricultural Economic Revie*w, *14*(2), 547–566.

Cui, L., & Medvid, V. (2022). Interactive relationship between China's industrial structure and human resources employment structure. *Problems and Perspectives in Management, 20*(11), 177–189.

Gazetdinov, S., Kovalenko, E. F., Yakimova, O., & Ziganshin, E. (2023). Development of coordination forms of organization of territorial and sectoral interactions in rural areas. *Vestnik of Kazan State Agrarian University, 18*(11), 92–98.

Ge, D., Long, H., Qiao, W., Wang, Z., Sun, D., & Yang, R. (2020). Effects of rural–urban migration on agricultural transformation: A case of Yucheng City, China. *Journal of Rural Studies, 76*(5), 85–95.

Gu, J., Zheng, J., & Zhang, J. (2022). Research on the coupling coordination and prediction of industrial convergence and ecological environment in rural of China. *Frontiers in Environmental Science.* https://doi.org/10.3389/fenvs.2022.1014848

Hong, Y. F. (1985). On the transformation of employment structure in China. *Population Journal, 6*(4), 80–83.

Hung, D. H., Zhang, J., & Mirza, S. S. (2015). Industrial structure and employment structure coordination in Viet Nam. *Journal of Economics and Sustainable Development, 6*(4), 78–84.

Ji, Q., & Basen, D. (2020). Research on time and space distribution of coordination degree between industrial structure and employment structure in China. *Henan Social Sciences, 28*(2), 103–114.

Levis, A. (1955). Economic development with unlimited supplies of labor. *Manchester School of Economic and Social Studies, 22*(1), 139–191.

Li, W., Zhou, X., & Ding, Z. (2023). Analysis of regional differences, dynamic evolution, and convergence characteristics of the level of rural revitalization in China. *Frontiers in Business, Economics and Management, 10*(1), 92–101.

Lin, F. B., Wu, D. J., & Huang, J. W. (2021). A comparative study of the relationship between industrial structure and employment structure in Fujian and Taiwan. *Fujian Tribune, 5*(4), 176–186.

Liu, G. G. (1981). On the adjustment of China's industrial structure. *Journal of Shaanxi University of Finance and Economics, 2*(2), 1–4.

Liu, H., & Wang, G. H. (2012). An analysis on the coordination development mechanism of the industrial structure and the employment structure in Hebei Province. *The 19th Annual International Conference on Management Science and Engineering, 2*(20), 1059–1063.

Luo, R. Y., & Zhang, L. P. (2013). Research on economic growth in the change of industrial structure in Western China. *Research in Finance and Economics, 9*(4), 30–36.

Qu, R., Rhee, Z., Bae, S.-J., & Lee, S.-H. (2022). Analysis of industrial diversification level of economic development in rural areas using Herfindahl Index and two-step clustering. *Sustainability, 14*(11), 6733.

Simon, K. (1973). Modern economic growth: Findings and reflections. *American Economic Review, 63*(3), 247–258.

Tan, L. (2011). A cluster-analysis of the employment structure deviation for the 11 cities in Zhejiang Province. *Advanced Materials Research, 1*(1), 540–543.

Tao, L., Zhang, S., & Xu, J. (2019). Analysis of industrial structure change and employment effect in Zhejiang Province. *Open Journal of Social Sciences, 7*(10), 426–432.

Todaro, M. P. (1969). A model of labor migration and urban unemployment in less developed countries. *The American Economic Review, 59*(1), 138–148.

Tran, T., & Doan, T. (2010). Industrialization, economic and employment structure changes in Vietnam during economic transition. *MPRA Paper, 11*(1), 1–14.

Wang, H., Wang, Z. B., & Zhu, Y. C. (2020). Research on the poverty reduction effect of labor migration in contiguous destitute areas under the rural revitalization strategy: Based on the dual perspective of income poverty and multidimensional poverty. *Rural Economy, 4*(1), 43–50.

Xia, J. H., & Jiao, W. H. (2018). Study on coupling effect between industrial structure and employment structure in Shandong Province. *Economic Problems, 10*(1), 65–71.

Zhang, J. W., Gao, Y. B., & Nan, L. I. (2016). Research on the employment effect of industrial structure changes in Guangdong Province: An empirical analysis based on spatial econometric model. *Journal of Guizhou Education University, 32*(1), 5–11.

Zhu, T., & Pang, L. (2015). Economic growth, industrial structure and employment structure synergy's effect analysis. *Review of Industrial Economics, 2*(4), 28–35.