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Analysis of the Heterogeneous Impact of FDI on Employment Quality

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Abstract: *Expanding employment capacity, improving employment quality, and alleviating structural employment conflicts are the main drivers for promoting high-quality regional economic development. Based on this, this paper takes 30 Chinese provinces as research samples from 2009-2019 to study the impact of FDI on employment quality. The research results show that (1) FDI growth can significantly contribute to the improvement of employment quality. (2) The impact of FDI on employment quality is regionally heterogeneous, with a boosting effect on employment quality in the east and central regions, and the boosting effect is greater in the central than in the east, while it has a negative impact on employment quality in the west. (3) The level of economic development has a significant promoting effect on employment quality; on the contrary, the local fiscal revenue, labor competition level, and infrastructure construction level will have a negative effect on employment quality. Therefore, this paper suggests that more FDI can be introduced, and at the same time, FDI with different characteristics should be focused on different regions according to local conditions, so as to better promote the employment quality.*

Keywords: *Employment Quality, FDI, Entropy, Regional Heterogeneity*

1. Introduction

The Strategic Planning Outline for Expanding Domestic Demand (2022-2035) issued by the Central Committee of the Communist Organization of China (CPC) and the State Council clearly points out to improve the quality of employment, increase the labor income of workers, continuously implement the employment priority strategy, adhere to the employment orientation of economic development, expand employment capacity and promote full employment. Over the past 40 years of reform and opening up, foreign investment has entered China on a large scale, which has effectively eased the employment pressure in China. Then, whether FDI can promote the development of employment quality needs to be studied and analyzed from theoretical and empirical perspectives, which is an important practical guidance for accurately grasping the current situation of employment quality in each province and improving employment quality.

The quality of employment is a concept that follows the concept of "decent work" developed by the International Labor Organization (ILO), and many studies have been conducted to construct indicators of employment quality, mainly at the micro and macro levels. Micro indicators include individual quality of work [1] and quality of employment [2]. Macro indicators include employment security, employment equity, and employment stability. Employment quality is a reflection of workers' well-being in both economic and non-economic terms.

FDI (International Direct Investment) is one of the main forms of modern internationalization of capital, which refers to an investment with a continuous interest in an enterprise operating in a country other than the investor's home country, with the aim of having a say in the management of the enterprise. In the existing studies on FDI, some scholars believe that FDI is an important engine for accelerating capital accumulation, technological innovation, import and export trade and economic development in the process of globalization [3], but others believe that FDI is a "pollution paradise" [4], where developed countries transfer high energy-consuming and high-polluting industries to developing countries through the FDI channel, thus hindering the sustainable development of local economies. This impedes the sustainable development of local economies.

At present, the research on the impact of FDI on employment mainly focuses on two levels: employment size and employment structure. At the level of employment size, some scholars believe that

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FDI has a positive contribution to the employment size of the host country.[5] However, some scholars also believe that FDI has a negative impact on employment size in host countries. [6] At the employment structure level, many literatures have shown that FDI can promote secondary employment and demarginalization of the employed population, but the pull effect on tertiary employment is not significant. [7]

Existing studies mainly focus on the impact of FDI on the economic aspects of employment, and few scholars have combined FDI and employment quality for in-depth exploration. In view of this, this paper conducts an in-depth study on the impact of FDI on employment quality. The innovation of this paper mainly lies in: firstly, the employment quality index is calculated by entropy value method and TOPSIS, which takes into account several indicators and can better reflect the correlation between the two. Second, the impact of FDI on employment quality and regional heterogeneity are empirically studied, with a view to making rationalized suggestions for improving employment quality.

2. Model

2.1 Entropy

In evaluating the employment quality, this paper constructs the employment quality index from four dimensions: employment environment, employment ability, labor compensation and labor protection, and uses the entropy value method to determine the weights of each indicator w_{ij} , whose weights are calculated based on the objective data of each indicator, which is scientific and objective to a certain extent. Before the construction of the system, it is necessary to standardize between each indicator to eliminate the difference in the scale, and the specific standardization process is as follows.

$$X_{ij} = \begin{cases} (X_{ij} - \min X_{ij}) / (\max X_{ij} - \min X_{ij}), X_{ij} \textit{ is the positive indicator} \\ (\max X_{ij} - X_{ij}) / (\max X_{ij} - \min X_{ij}), X_{ij} \textit{ is the negative indicator} \end{cases} \quad (1)$$

Where X_{ij} (i=1, 2, ... m; j =1, 2, ... n) represents the jth indicator of the ith province; the data used in the entropy method step are all standardized indicators, and the specific measurement steps are as follows.

(1) Normalized data for proportional transformation: $A_{ij} = X_{ij} / \sum_{i=1}^{n} X_{ij} (i = 1, 2, ..., m; j = 1, 2, ..., n)$.

(2) Calculate the entropy value: $h_j = -K \sum_{i=1}^{m} A_{ij} \ln A_{ij}$, where $K = 1 / \ln m$, when $A_{ij} = 0$, $A_{ij} \ln A_{ij} = 0$.

(3) Calculate the weights: $w_{ij} = (1 - h_j) / \sum_{j=1}^{m} (1 - h_j)$.

(4) Overall evaluation score: $T_{ij} = \sum_{j=1}^{n} X_{ij} w_{ij}$.

2.2 Tobit

The employment quality index is between 0 and 1, which has the characteristic of being cut, and is eligible for the Tobit model setting of the restricted dependent variable; meanwhile, given that the Tobit model is more frequently used in the study of influencing factors, the following benchmark model is set

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$$\begin{cases} Y_{it}^{'} = \alpha_0 + \beta_k Z_{it} + \varepsilon_{it} \\ If \ \ Y_{it}^{'} > 0, Y_{it} = Y_{it}^{'} \\ If \ \ Y_{it}^{'} < 0, Y_{it} = 0 \\ i = 1,2,...,30; t = 2009,2010,...,2019 \end{cases} \tag{2}$$

2.3 Variable

(1) Explained variable

Based on the definition of the basic connotation in the existing literature, drawing on the index system of previous evaluations, and following the principles of scientific, systematic, comparable and operable, this study selects 16 evaluation indicators from four dimensions of employment environment, employment ability, labor compensation and labor protection to establish the employment quality index system, as shown in Table 1.

Table 1: Provincial employment quality evaluation index system in China

Target layer	Level 1	Level 2	Type
Quality of Employment	Employment Environment	Real GDP per capita	+
		Real GDP per capita growth rate	+
		The proportion of employment in the tertiary sector	+
		Urban employment share	+
		Urban registered unemployment rate	-
	Employment Ability	Average years of education in the labor force	+
		Percentage of workforce receiving training	+
		Percentage of vocational skills personnel	+
	Labor Compensation	Average wage in urban units	+
		Average wage growth rate in urban units	+
		Urban workers' medical insurance coverage rate	+
		Coverage rate of urban workers' pension insurance	+
		Urban-rural income gap	-
	Labor Protection	Severity of labor disputes	-
		Incidence of work-related accidents	-
		Incidence of occupational diseases	-

(2) Explanatory and control variables

In this paper, the FDI indicator system is constructed from four aspects: number of enterprises, total investment, registered capital and employed population, as shown in Table 2.

Table 2: FDI Indicator System

Target layer	Level 1	Level 2	Type
FDI	Number of companies	Number of foreign enterprises registered	+
	Total investment	Total investment by foreign enterprises	+
	Registered Capital	Registered capital of foreign enterprises	+
	Employed population	Employment of foreign enterprises	+

Drawing on the existing literature, variables that may affect the quality of employment, such as local fiscal revenue, level of labor competition, level of transportation, level of economic development, and level of infrastructure development, are selected as control variables in this paper.

2.4 Data

Thirty provinces in China are selected as the sample to build panel data from 2009-2019. The original data are obtained from China Statistical Yearbook, China Labor Statistical Yearbook, China Foreign Direct Investment Statistical Bulletin, as well as the National Bureau of Statistics and the CEE database, etc. The Tibet Autonomous Region is deleted due to serious data deficiencies. In this paper, the total foreign investment and registered capital of foreign enterprises are converted according to the average exchange rate of RMB against USD in the current year.

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3. Results

Tobit regressions were conducted on the employment quality index and the FDI index, and the regression results are shown in Table 3.

Table 3: Regression results

variable	Tobit							
	QE	QE		QE(E)	QE(M)	QE(W)	QE(TOPSIS)	QE(TOPSIS)
	(1)	(2)		(3)	(4)	(5)	(6)	(7)
FDI	0.1556***	0.1516***		0.1896**	1.0528**	-0.8194***	0.1704***	0.129***
	(0.0557)	(0.0470)		(0.0909)	(0.4385)	(0.3039)	(0.0388)	(0.0432)
finance		-0.1498*		-0.1689	-0.0369	-0.2020***		-0.1568**
		(0.084)		(0.3615)	(0.1914)	(0.0665)		(0.0654)
labor		-0.0316***		-0.0193	0.0303	0.0008		-0.0186**
		(0.0081)		(0.0236)	(0.192)	(0.0115)		(0.0074)
traffic		0.0043		0.0431***	-0.0093	0.0336***		0.0139**
		(0.0066)		(0.0151)	(0.0065)	(0.0087)		(0.0068)
economics		0.0689***		0.0551	0.0583*	0.0533***		0.0011
		(0.0164)		(0.0503)	(0.0349)	(0.0166)		(0.0188)
facility		-0.0636***		0.0043	-0.0054*	-0.0076***		-0.0087
		(0.0157)		(0.0034)	(0.0029)	(0.0016)		(0.0144)
cons	0.2923***	0.231***		0.8399***	0.6025***	0.3597***	0.1412***	0.189***
	(0.0188)	(0.0406)		(0.2896)	(0.1767)	(0.0741)	(0.0135)	(0.0341)
sigma_u	0.0888***	0.0583***		0.0842**	0.0270***		0.0647***	0.0587***
	(0.0122)	(0.0087)		(0.0343)	(0.0086)		(0.0087)	(0.0127)
sigma_e	0.0457***	0.0454***		0.0524***	0.0328***		0.0311***	0.0301***
	(0.0018)	(0.0018)		(0.0039)	(0.0023)		(0.0012)	(0.0013)
LR	386.11***	198.64***		48.72***	15.72***		423.72***	196.57***

Employment quality is positively related to FDI, and the regression coefficient of FDI on employment quality does not change much after adding control variables and remains significant at the 1% level, indicating that FDI causes a significant positive impact on employment quality. This is because the inflow of foreign capital can promote human capital development to a great extent and guide the benign development of capital. In order to attract foreign investment, local governments will generally increase investment in education and cultivate excellent technical talents, which will largely promote the quality of employment. In the past ten years, China's Pilot Free Trade Zone has introduced a large amount of foreign investment, from scratch, from little to a lot, daring to be the first and bold to innovate, forming a multi-field, composite comprehensive reform posture, carrying out a total of more than 3,400 reform pilots, promoting a large number of important fundamental reforms and high-level opening initiatives, creating a vivid model of promoting reform with opening and development with reform, winning the initiative of reform and opening up for China, and providing The construction of a new system of open economy has laid a good foundation. At present, China's reform and opening up is facing a complex external environment, in order to create a high-level open pilot free trade zone, said Huo Jianguo, vice president of the China World Trade Organization Research Institute, to introduce FDI according to local conditions, so that the pilot free trade zone has become the core carrier and platform of the opening pattern of land and sea inside and outside the linkage, east and west two-way mutual benefit.

The quality of employment is negatively related to local fiscal revenue and is significant at the 10% level, indicating that an increase in local fiscal revenue will have a negative impact on the quality of employment. This is because most of the local revenues come from tax revenues, and the increase in taxes reduces the income of workers in another way.

The quality of employment is negatively related to the level of labor competition and is significant at the 1% level, indicating that an increase in the level of labor competition will have a negative impact on the quality of employment. This is because, the higher the pressure of labor competition, the more options companies have and the higher the possibility of workers being squeezed.

The quality of employment is positively correlated with the level of economic development and is significant at the 1% level, indicating that an increase in the level of economic development significantly contributes to the quality of employment. This is because an increase in the level of local economy tends to lead to a reduction in the working hours of workers and an increase in welfare benefits.

The quality of employment is negatively related to the level of infrastructure construction and is significant at the 1% level, indicating that an increase in the level of labor competition will have a negative impact on the quality of employment. This may be due to the fact that an increase in the level of infrastructure development will increase the price of basic services to some extent, which will have a

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greater negative impact on low-income earners.

To ensure the stability of the results, the employment quality index was calculated again using TOPSIS for regression analysis, and the test results are presented in columns (6) and (7), and the regression coefficients are in the same direction as those calculated using the entropy value method and are significant at the 1% level, indicating that the results are not by chance.

There are significant regional differences in FDI and economic agglomeration in China, which leads to the question of whether the impact of FDI on employment quality varies by region. Columns (3), (4), and (5) of Table 3 give the regression results of the impact of FDI on employment quality in the eastern, central, and western regions, where column (5) cannot use Tobit regressions with a panel of random effects because the LR test does not reject the original hypothesis of no individual effects, so we use a mixed Tobit for the test. The results show that the results for the eastern and central regions are consistent with the empirical results at the national level, and FDI causes a significant positive impact on employment quality, while the impact of FDI on employment quality is greater in the central region than in the eastern region, because, the eastern region itself has sufficient capital and excess capacity, and FDI has limited improvement on employment quality; while the central region itself does not have sufficient capital, and the development of new and emerging industries requires large amount of capital, the introduction of FDI can expand the employment capacity and promote full employment, so the effect of FDI in the central region is more significant. The results in the western region differ from the empirical results at the national level in that FDI can have a negative impact on employment quality, probably because the western region is economically backward and the entry of foreign capital is to transfer high energy-consuming and high-polluting industries, which cannot bring sustainable economic development to the local area, and even bring serious environmental pollution to the local area, further reducing the local employment quality.

4. Conclusions

In the context of China's deepening reform and opening up and integration into globalization, the scale of attracting FDI is increasing in quantity, which will certainly affect the domestic employment quality through the market's own and external adjustment effects. In this regard, this paper conducts Tobit regression on employment quality and FDI, and draws the following conclusions: (1) the growth of FDI contributes to the improvement of employment quality; (2) the impact of FDI on employment quality has regional heterogeneity, with a boosting effect on employment quality in the east and central regions, and the boosting effect in the central region is greater than that in the east, while it has a negative impact on employment quality in the western region.

Based on theoretical analysis and empirical results, this paper can draw the following policy insights: (1) Optimize the investment environment; FDI plays an important role in relieving employment pressure and improving employment quality; China should reasonably regulate and control foreign direct investment, further enhance the openness, transparency and standardization of the investment environment, and provide a strong guarantee for achieving a higher level of opening to the outside world, promoting high-quality economic development and improving employment quality. (2) Optimize the industrial structure of foreign investment. In order to prevent foreign capital from transferring high energy-consuming and high-polluting industries, foreign capital should be introduced selectively to ensure that the sustainable development of the local economy will not be hindered while foreign capital is introduced. (3) Establish a sound protection system for employed workers. In response to the call of the national 14th "Five-Year Plan" for employment, we should speed up the implementation of the "Guidance on the Protection of Labor Rights and Interests of Workers in New Employment Patterns", establish a sound system for the protection of labor rights and interests, and improve the quality of employment of workers.

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