

Study on the Influence of Labor Mobility on Urban Economic Growth under The Background of "Strengthening Provincial Capital"

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Abstract

It is of great significance to explore the influence of labor mobility on urban economic growth in China under the background of "Strengthening provincial capital" strategy, which is of great significance to promote urban economic development and improve the strategy of talent introduction. Based on the panel data of 30 provincial capitals (including municipalities directly under the Central Government) in China from 2010 to 2019, this paper uses the two-way fixed-effect model for empirical test. The results show that labor mobility has a positive impact on urban economic growth, and the results are still significant after the lag processing and instrumental variable method test. The regional heterogeneity test shows that labor mobility in the central region plays a stronger role in promoting the economic growth of provincial capital cities than that in the eastern and western regions. Therefore, it is proposed that cities should accelerate the improvement of talent introduction policies, accelerate the development of secondary and tertiary industries to create more jobs for absorbing labor force, accelerate the promotion of resource concentration to provincial capital cities, cultivate the competitiveness of provincial capital cities, and attract labor force inflow.

Keywords

Strengthening Provincial Capital; Labor Mobility; Urban Economic Growth.

1. Introduction

Entering the new development stage, the national level constantly emphasizes the need to form agglomeration effect and radiate the development of surrounding regions by enhancing the core competitiveness of economic development advantages such as central cities and urban agglomerations (Yuan et al., 2021). The report of the Party's 20th National Congress further clarified that "we should build a coordinated development pattern of large, medium and small cities based on city clusters and metropolitan areas". In local practice, the implementation of "Strengthening provincial capital" strategy has become a common choice for many provinces and regions to accelerate the development of regional economic growth pole. For example, Fujian, Anhui and Jiangsu have formulated the "Strengthening provincial capital" strategy successively, and achieved certain results. The radiation effect of "Strengthening provincial capital" has been highlighted. Accelerating the cultivation of regional core competitiveness of provincial capitals means that limited resources will flow to provincial capitals first, and production factors such as labor, capital and technology will gather in provincial capitals, becoming a powerful engine to promote urban economic growth, while labor force is undoubtedly one of the most influential factors for economic growth.

Since the reform and opening up, China has significantly improved regional economic growth by virtue of its strong advantage of demographic dividend. However, in recent years, the size of China's labor population has been declining, the aging population has gradually intensified, and the "demographic dividend" has gradually disappeared (Long et al., 2022). It is of great

significance for sustained and rapid economic growth in the medium and long term in the future (Zhong and Li, 2010). Therefore, how to attract labor force has become the key for cities to improve their regional competitive advantages. At present, many cities have started the "recruitment" war, through housing subsidies, improved treatment, social security and other preferential policies to attract the influx of labor force, to form the agglomeration effect of development and promote economic growth and reserve strong power. Under the background of "strengthening provincial capital", China's attention to urban economic growth has reached an unprecedented height. As the most active factor in production activities, labor force's extensive flow in the society will inevitably produce a series of impacts on urban economic development. What is the effect of labor mobility on urban economic growth? How does labor mobility affect urban economic development? These are urgent questions. Exploring the effect and mechanism of labor mobility on urban economic growth is of great practical significance for promoting urban development.

Table 1. The expression of "Strengthening provincial capital" in the 14th Five-Year Plan of some provinces and regions

Province	Strengthening provincial capital strategy expression	Urban primacy
Shandong	We will implement the strategy of "strengthening the provincial capital", support Jinan in building itself into a modern international metropolis of "Strengthening beauty Fortis", and accelerate its development into a national central city.	13.87%
Hebei	Strengthen support for provincial capital city construction, build a modern metropolitan area of Shijiazhuang, and play a radiating role.	16.39%
Jiangxi	To promote Nanchang to fulfill its role as the provincial capital, enhance its function as the provincial capital, and enhance its core leading function and radiation-driven energy level.	22.36%
Fujian	We will implement the strategy of strengthening the provincial capital, deepen the all-area opening-up of Fuzhou New Area, build a high-level coastal new city, and accelerate the construction of a modern international city.	22.82%
Guizhou	Support Guiyang to grow bigger, strictly implement urban planning, improve urban management level, promote the integrated development of Guiyang, and enhance the first place of a provincial capital city.	24.19%
Yunnan	To expand and strengthen the capital city of Kunming, the regional GDP of Kunming will account for more than 30% of the total economic volume of the province by 2025.	27.46%

2. Literature Review

On the research of labor mobility, scholars at home and abroad have carried out rich research, and mainly around the causes of labor mobility and its impact on social economy. As for the reasons of labor mobility, William Di was the first to study the causes of labor mobility from the perspective of economic development, and pointed out that the existence of interest differences will promote the mobility of workers from the agricultural sector to the industrial sector and the commercial sector. Lewis's dual economic structure points out that the expansion of reproduction in the industrial sector will further attract the surplus rural labor force to the urban industrial sector. At present, domestic and foreign scholars have conducted a more extensive and thorough research on the causes of labor mobility, As Lewis (1954), Pointed out that the wage rate caused by the urban-rural productivity difference will encourage the rural labor force to move to the city, Krugman (1991) analyzed the theoretical mechanism of urban housing price affecting labor mobility in its "center-periphery" model, Lai (2005), Yan (2006),

Cai (2007) and others believe that the widening regional income gap provides the impetus for labor mobility, Appropriate income gap is conducive to resource allocation between regions. In recent years, with the rapid development of industrialization, technological progress will further have an impact on labor mobility, leading to changes in labor structure (Blanchard, 2013; Maran, 2015; Frey, 2017), and with the development of population intelligence, will further affect the scale and direction of labor mobility (Yang et al., 2014; Li et al., 2021).

At the same time, labor mobility will also have a series of effects on social and economic development, and mainly focus on the impact of labor mobility on economic growth research. For example, Cai and Wang (1999) used quantitative analysis method to empirically study the contribution of labor force mobility to areas with high level of economic development to economic growth; Li and Yin (2005) built a model proving that continuous labor transfer will lead to endogenous economic growth; By Duan and Liu (2005), The convergence effect of population mobility on the economic growth gap is obvious, At the same time, the floating population has a significant contribution to the economic growth of each region; Wu (2016), when studying the contribution of China's agricultural labor mobility to economic growth, Agricultural labor mobility can still contribute to the continuation of the "Chinese miracle"; Cheng et al. (2018) also found that the contribution rate of rural labor transfer to non-agricultural sector output and total social output were as high as 11.64% and 10.21% respectively, In addition, labor transfer has increased their own productivity by 4.49 times, Nearly 8% to economic growth. In order to further play the economic effect brought by labor transfer, Li (2020) proposed to accelerate the transfer of rural labor to non-agricultural industries, promote the optimal allocation of labor resources, and significantly improve the potential growth rate of the economy in the future. In addition, current scholars have also explored the impact of labor mobility on social economy from a broader perspective. For example, Cao et al. (2020) showed that labor migration has a significant impact on urban industrial structure and has a positive impact on industrial production efficiency; Luo et al. (2022) also found that labor mobility can promote the transformation and upgrading of urban industrial structure; Hu and Hou (2022) found that labor mobility is beneficial to significantly improve regional innovation capacity and bring siphon effect and spillover effect to the surrounding areas. At the same time, labor mobility can also effectively drive the growth of consumption and investment, and promote the development of the urban tertiary industry, and further improve the urban total factor productivity and urban economic efficiency (Xu , 2012; Liu , 2013; Cao et al., 2022).

To sum up, although the current academic community has from the cause of labor mobility and its influence on social economy has rich research, and there are a large number of literature shows that labor mobility to promote economic growth, but most research from the provincial level or national macro level, few literature from the perspective of city to explore the relationship between labor mobility and urban economic growth. In addition, under the background of the widespread implementation of the strategy of "strengthening provincial capitals" in China, a large number of labor force flows to provincial capital city areas, which may have a more significant impact on the economic growth of provincial capitals. However, less literature discusses the relationship between labor mobility and urban economic growth from the perspective of provincial capitals. Therefore, this paper takes the provincial capitals of China to explore the effect and mechanism of labor flow on urban economic growth.

3. Research Design

3.1. Variable Selection

3.1.1. Explained Variable

In this paper, the per capita GDP (Pgdp) of 30 provincial capitals (including municipalities directly under the Central Government) is selected as the explanatory variable to describe the economic growth level of each city.

3.1.2. Core Explanatory Variables

The core explanatory variable of this paper is the level of labor mobility (Labor). This paper draws lessons from Li and Huang (2014), the population inflow rate as a measure of labor mobility alternative variables, the concrete approach to use urban resident population minus urban population, thus get net migration population, the net ratio of population to obtain net migration population ratio index, namely the population inflow rate.

3.1.3. Control Variables

(1) Industrial structure (Ind). The optimization and upgrading of the industrial structure will promote the increase of the working population in the secondary and tertiary industries, which is of great significance to promoting the employment of the labor force, which is conducive to stimulating the vitality of urban development and promoting economic growth. This paper draws on the practice of Gan et al. (2011), and uses the ratio of the added value of the tertiary industry to the added value of the secondary industry.

(2) Salary level (Wage). The wage level is the labor remuneration paid by the enterprise to the employees within a certain period. The higher the wage level, the greater the attraction to the labor force, and the more high-end talents can be attracted to gather, and then the urban economic development level can be improved through talent agglomeration. In this paper, the average wage level of the active employees is used as a proxy variable for the urban wage level.

(3) Financial expenditure (Fiscal). In order to achieve economic growth, the government will use a part of the fiscal revenue for fiscal expenditure, and a series of fiscal policies adopted by the government involved in economic activities will have an impact on the urban economic growth. This paper uses the ratio of government expenditure and GDP to express the level of fiscal expenditure.

(4) Financial development (Finance). In the development of modern economy, the financial industry plays a vital role in driving residents' savings and promoting investment, and its development level will have an important impact on the economic growth of a region. This paper uses the ratio of the loan balance of financial institutions at the end of the year to GDP to measure the level of urban financial development.

3.2. Model Specification

In order to test the impact of labor mobility on economic growth under the background of "Strengthening provincial capital", the two-way fixed effect panel model is constructed as the basic model to test the overall effect of labor mobility on economic growth. In order to reduce the nonlinear relationship, the non-stationary sequence and the large value range gap of different variables, we draw the concept of relative output value proposed by Wang (2012), take the logarithm of the explained variables, explanatory variables and control variables, and construct the following equations:

$$\ln Pgdp_{it} = \alpha_0 + \alpha_1 \ln Labor_{it} + \alpha_2 X_{it} + \delta_{it} + \gamma_{it} + \varepsilon_{it} \quad (1)$$

Among them, $\ln Pgd_{it}$ is the level of urban economic development, $\ln Labor_{it}$ is the labor mobility index, X_{it} is a series of control variables, including industrial structure (Ind), wage level (Wage), fiscal expenditure (Fiscal) and financial development (Finance), δ_{it} is individual fixed effect, γ_{it} is time fixed effect, and ε_{it} is the random disturbance term.

3.3. Data Sources

In order to ensure the availability and continuity of data, this paper selects the panel data of 30 provincial capitals in China from 2010 to 2019. The data are mainly selected from China City Statistical Yearbook, and some data are selected from the statistical Yearbook of each city. The descriptive statistics of each variable are shown in Table 2.

Table 2. Descriptive statistics

Variable	N	Mean	Standard error	Min	Max
Pgdp	300	7.404	2.894	2.606	16.568
Labor	300	0.921	0.523	0.333	3.590
Ind	300	0.400	0.097	0.160	0.622
Wage	300	6.696	2.354	3.113	17.32
Fiscal	300	6.310	1.068	4.011	9.030
Finance	300	2.487	0.729	1.345	7.048

4. Empirical Results

4.1. Panel Per Unit Root Test

The regression model requires the data series to be stable. In order to avoid the pseudo-regression phenomenon caused by the data of non-stationary time series, the LLC test method was adopted in this paper to carry out the unit root test for each variable. The original assumption of the LLC test method is that there is a common unit root process, and the autoregressive coefficients of all panels are assumed to be the same, that is, there is a common root, and panel data is required to be balanced panel. As can be seen from the results of unit root test in Table 3, the corresponding P values of LLC statistics of variables Pgdp, Labor, Ind, Wage, Fiscal and Finance are all less than 0.01 at the significance level. The values of t-Statistics are all less than the critical value at the significance level of 10%, so the hypothesis of the existence of unit root can be rejected, that is, the variables are stationary series through the unit root test.

Table 3. Results of the LLC test

Variable	t-statistic	p-value	Stationeriness
Pgdp	-5.731	0.000	Yes
Labor	-8.903	0.000	Yes
Ind	-12.779	0.000	Yes
Wage	-2.882	0.002	Yes
Fiscal	-19.959	0.000	Yes
Finance	-5.1917	0.000	Yes

4.2. Benchmark Regression Results

The two-way fixed-effect model is used to estimate the effect of labor mobility on urban economic growth, and the results are shown in Table 4. Among them, regression (1) is the regression result of not adding control variables, and regression (2) to regression (5) is the regression result of adding four control variables of industrial structure, wage level, fiscal

expenditure and financial development. It can be seen that the effect of labor mobility on urban economic growth was significant at 1% significance regardless of the control variable. This shows that the migration of the labor force is conducive to promoting urban economic growth. This is because the migration of labor force into cities provides the most basic, active and creative factors of production for urban development, which will bring a new "demographic dividend" to urban economic growth and become a new economic growth point. On the one hand, the inflow of labor first means that the increase of urban population, it will greatly promote urban consumption, investment, such as a large number of workers in the city by buying commercial housing to pull the development of urban real estate industry, and the demand for housing will further expand workers demand for housing facilities, it will further stimulate urban creativity, thus promote urban economic growth. On the other hand, a large number of foreign labor force mainly flows into the secondary and tertiary industries of the cities, which is conducive to promoting the optimization of the urban industrial structure, driving the rapid development of the secondary and tertiary industries, optimizing the urban economic growth mode, and further promoting the urban economic growth. In addition, the labor mobility means that a large number of young, high-quality and highly educated talents will automatically flow to cities with high return rate, providing sufficient talent reserve for the innovative development of cities, which is conducive to stimulating the vitality of urban development and promoting the innovative development of provincial capital cities.

Table 4. Benchmark regression results

Variable	Reg(1)	Reg(2)	Reg(3)	Reg(4)	Reg(5)
Labor	2.081***	2.087***	0.928***	0.997***	0.959***
	(7.48)	(7.85)	(2.64)	(2.86)	(2.77)
Ind		6.291***	6.574***	6.635***	6.264***
		(5.10)	(5.55)	(5.66)	(5.34)
Wage			0.584***	0.579***	0.573***
			(4.79)	(4.81)	(4.80)
Fiscal				0.493***	0.500***
				(2.70)	(2.76)
Finance					-0.289**
					(-2.35)
Cons	3.442***	0.691	-1.022	-3.854***	-2.979**
	(15.00)	(1.19)	(-1.54)	(-3.12)	(-2.33)
Time effect	Yes	Yes	Yes	Yes	Yes
Regional effect	Yes	Yes	Yes	Yes	Yes
F	42.98***	42.06***	40.76***	41.25***	34.24***
N	300	300	300	300	300
R ²	0.838	0.852	0.864	0.868	0.871

Note: Table *,** and *** are significant at 10%, 5% and 1% respectively, with t value in brackets.

In terms of control variables, the optimization and upgrading of industrial structure, the increase of labor remuneration and the increase of government fiscal expenditure all promote the urban economic growth at the significant level of 1%, while financial development plays a certain inhibitory role on economic growth. The optimization of industrial structure means that the proportion of the tertiary industry in GDP will increase, and the tertiary industry, as the largest industry to attract workers, will greatly promote the urban economic growth. Rising labor remuneration means that the disposable income of consumers increases, and consumers

will spend more income on consumption and investment, which expands the domestic demand for urban development and is conducive to promoting urban economic growth. The increase in government fiscal expenditure means that the government will spend more income on government purchase and transfer payments, constantly improving the internal urban infrastructure and optimizing the environment for urban economic development. At the same time, the government's direct transfer payment to low-income groups is conducive to expanding consumer groups and releasing the driving role of domestic demand in the economy.

4.3. Robustness Test

Table 5. Regression results for robustness test

Variable	Interpretive variable lag term		Instrumental variable	
	(1) lag 1	(2) lag 2	(3) Stage 1	(4) Stage 2
L.Labor	1.442*** (3.64)			
L2.Labor		1.787*** (3.87)		
IV			0.176*** (6.37)	
Labor				3.754*** (4.21)
Cons	-3.092** (-2.25)	-2.819* (-1.88)		
Kleibergen-Paap rk LM			24.137***	
Cragg-Donald Wald F			40.633	
Kleibergen-Paap rk Wald F			29.785	
Control variable	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes
Regional effect	Yes	Yes	Yes	Yes
F	98.27***	76.00***	40.63***	168.42***
N	270	240	300	300
R ²	0.849	0.822	0.750	0.967

In order to deal with the endogenous problems caused by the possible bidirectional causality between labor transfer and urban economic development, as well as the interference of random disturbance term on labor transfer, this paper takes the explanatory variable lag term and uses the instrumental variable method to conduct the robustness test. First, respectively of all, take the explanatory variables lag 1 and lag 2 for regression, the results are shown in table 5 column (1) and column (2), you can see that the lag of labor transfer phase 1 and lag 2 the influence of urban economic growth are significant, consistent with the benchmark regression results, shows that the labor migration of urban economic development has significant effect, and has strong sustainability. Secondly, this paper tries to construct an exogenous variable that is highly correlated with the level of labor mobility and is not associated with the random disturbance term as its instrumental variable, and uses the two-stage least squares method (2SLS) for regression analysis. In the selection of instrumental variables, this paper refers to the use of urban population density (IV) as the instrumental variable. Table 3 columns (3) and (4) are listed as the regression results of the instrumental variable method, and the impact of labor migration on urban economic growth is significantly positive, which is consistent with the benchmark regression results. Meanwhile, Kleibergen-Paap rk LM was significant at the 1%

level, both Cragg-Donald Wald F and Kleibergen-Paap rk Wald F values were greater than 10, and the Wald F statistic was higher than the 10% cut-off of the corresponding Stock-Yogo weak instrumental variable test, indicating that there was no weak instrumental variable problem. The above results show that the promotion effect of labor mobility on urban economic growth is not affected by the endogenous problems.

4.4. Heterogeneity Test

Considering the vast size of China and the obvious differences in economic and social conditions in different regions, the scale of labor mobility and the effect of its impact on economic growth may be heterogeneous in different regions. In this paper, the study sample was divided into the eastern, central and western regions for the heterogeneity test, and the results are shown in the regression (1) -regression (3) in Table 6. Among them, in the eastern, central and western samples, the labor mobility had a positive effect on the urban economic growth, and the central region passed the 1% test of significance, which indicates to some extent that the labor mobility in the economic growth of the provincial capitals is stronger than that in the eastern and western regions. The reason may be that the eastern region is an economically developed region in China, with large density of large cities, which may attract stronger than the provincial capitals, such as Suzhou, Jiangsu, Qingdao, Dalian and Liaoning provinces, which can seize limited labor resources, resulting in less obvious labor mobility on the eastern provincial capitals; subject to the natural environment and slow economic development, the labor force flows to the central and eastern regions, leading to less labor and limited economy. Provinces in the central region under the limited resources, through the priority of the provincial capital city strategy attracted a large number of labor to the central city, at the same time, the provincial capital of the central region compared with other cities in the province more competitive, labor is more willing to gather in the provincial capital city, and labor mobility can greatly drive the central capital city economic growth.

Table 6. Results of the regression for the heterogeneity test

Variable	Eastern	Central	Westward
Labor	0.042	4.810***	0.866
	(0.07)	(4.06)	(1.27)
Ind	10.789***	6.232**	1.495
	(4.70)	(2.61)	(1.29)
Wage	0.906***	2.243***	-0.280**
	(4.38)	(5.69)	(-2.57)
Fiscal	0.907**	-0.482	0.285*
	(2.58)	(-0.94)	(1.95)
Finance	-0.230	-0.889	-0.309*
	(-1.32)	(-1.58)	(-1.91)
Cons	-7.891***	-4.171	2.811**
	(-3.03)	(-1.45)	(2.43)
Time effect	Yes	Yes	Yes
Regional effect	Yes	Yes	Yes
F	52.34***	39.50***	42.25***
N	110	80	110
R ²	0.896	0.905	0.943

5. Conclusion and Suggestion

Labor mobility is an important basis for economic development and a necessary way to improve resource mismatch. Under the background of "Strengthening provincial capital", it is of great significance to explore the influence of labor force agglomeration on urban economic growth. Based on the panel data of 30 provincial capitals (including municipalities directly under the Central Government) from 2010 to 2019, this paper uses the two-way fixed effect model to test the positive impact of the mobility of effective labor factors on the economic growth of provincial capitals. The following conclusions are drawn:

1) Labor mobility has a positive impact on urban economic growth, and the results are still significant after the lag period treatment and the use of instrumental variable method. It can be seen that the role of floating labor force in promoting urban economic development cannot be ignored.

2) The optimization and upgrading of industrial structure, labor remuneration and government fiscal spending increase are promoting urban economic growth, the mobile labor on economic growth at the same time can not ignore the upgrading of industrial structure, raise wages to attract foreign employment floating population, further have a positive impact on urban economic development.

3) Regional heterogeneity test showed that the labor mobility scale and its effect on economic growth in different regions have heterogeneity, the central labor mobility to improve regional capital city economic growth is stronger than the east, the western region, central provinces under the limited resources, through the priority to the development of provincial capital city strategy attracted a large number of labor mobility to the central city.

The above conclusions are of important policy significance for promoting the urban economic development and improving the talent introduction strategy:

1) The empirical results show that the migration of labor force has a promoting effect on urban economic growth. Therefore, under the background of "Strengthening provincial capital", we should accelerate the reform of the household registration system, establish and improve the social security system, promote the agglomeration of labor force in provincial capital city areas, and further play the agglomeration effect of labor force. At the same time, we should speed up the improvement of talent introduction policies, especially high-quality talents, and take a series of measures such as improving the treatment of talents to attract the inflow of labor force.

2) Government departments should speed up the development of urban secondary and tertiary industries and solve the excess economic capacity of cities. With the economic development and industrial structure upgrading, the labor force will inevitably transfer from the primary industry to the secondary and tertiary industries, and from rural areas to urban areas. The relevant research of labor economics has proved that the fundamental way to solve the common problem of labor surplus in economically underdeveloped areas is to conform to the trend of industrialization, accelerate the development process of urbanization, rationally allocate the rural surplus labor force, and create more jobs for the absorption of labor force.

3) In the face of the regional heterogeneity of the driving effect of labor mobility on economic growth, the central and western regions should rely on the strategy of "strengthening provincial capitals", accelerate the priority agglomeration of resources to provincial capitals, cultivate the competitiveness of provincial capitals, and attract the inflow of labor force.

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