

# The Impact of Population Migration on Regional Economic Growth: A Case Study of Heilongjiang Province

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**Abstract:** China is the most populous country in the world. With the rapid development of China's Reform and Opening-up as well as the reform of the economic system, the problem of multi population migration in China has emerged, the most prominent of which is the problem of population migration. Population migration is one of the important factors that affect the development of regional economy. Since the Reform and Opening-up, the unbalanced and inclined economic development strategy of regional economy implemented in China has ignored the balance goal in emphasizing the economic benefit goal. The country's investment focus and policy dividend are inclined to the coastal areas. Behind the rapid economic development of China, the imbalance of economic development among regions has gradually become one of the hidden dangers of China's economic development. Various studies at home and abroad have shown that the unbalanced development of regional economy will cause many hazards, such as conflicts or even distortions in regional interest relations, unreasonable resource distribution and utilization, and the widening income gap. Among the population migration issues, Heilongjiang Province is typical, and many regional studies on Heilongjiang region focus on the government system, industrial structure and other reasons, and often ignore the factors of population migration. With the rapid economic development of different regions, the difference in regional economic development has become an important problem in China's rapid development. Excessive regional economic development gap will inevitably lead to a series of social problems and a vicious circle. The core of this study is to explore the impact of population migration on economic growth in Heilongjiang Province. Through combing relevant literature, based on the theory of population migration and the relevant theories of regional economic growth, theoretical analysis and assumptions are made on this issue. Based on the panel data analysis of 13 prefecture-level cities in Heilongjiang Province, the following conclusions are drawn through empirical analysis. Firstly, the migration of Heilongjiang population has a positive impact on economic development. Secondly, government policies and industrial structure have a significant impact on Heilongjiang's economic development.

**Keywords:** Population Migration; Regional economy; Panel Data

## 1. Introduction

Since 2012, the GDP growth rate of Heilongjiang Province has continued to decline and is lower than the national average. From 2019 to 2021, the average growth rate of individual provinces in the first quarter of the year is only 1.5% of that of Heilongjiang Province. Since 2010, the population in Heilongjiang Province has changed from a net immigration state to a net emigration state and has remained so far. The natural growth rate of the population has been negative all the year round and the population is aging seriously. It can be seen that a large number of population emigration has seriously restricted the economic development of Heilongjiang Province. And population migration and regional economic growth show interaction and mutual restriction. The continuous emigration of population has led to many social problems, such as brain drain and lack of labor force. The backward regional economic development is one of the important reasons for population emigration. At the same time, the continuous emigration of population has also restricted the economic development of Heilongjiang Province. It can be seen that Heilongjiang Province is in a vicious circle on this issue. At present, most of the researches in the academic circle focus on countries or regions, and few of them focus on provincial units. Due to the problem of regional differences, the research results can't be applied to all regions. Heilongjiang Province, as a major agricultural province in China, has its particularity in regional economic

development. Based on which, this paper will put forward countermeasures and suggestions on this issue based on the empirical results and the actual situation of Heilongjiang Province from the goal of promoting regional economic growth, reducing labor migration and attracting talents.

## 2. Literature Review

With the rapid development of regional economy in China's coastal areas, more and more scholars have begun to pay attention to the impact of population mobility on China and other regions. As for the rule of population migration, Research on China's Inter provincial Population Migration and Regional Economic Development: Analysis Based on the "Six" Census Data, Yan Yunyan, Chen Jinyong and Liu Ta points out that the main purpose of population migration is to obtain higher economic income and improve living standards. However, due to the different economic development in different regions, the impact of population migration on different regions is also different [1-2]. Wang Zhenying proposed in the Law of Population Migration that developed regions can better withstand the pressure and negative impact of free population migration due to their strong economic strength. Through the research on the laws of population migration in the past literature, it can be found that Heilongjiang Province may face the problem of population loss and the pressure of economic development brought by population loss [3]. As for the impact of population mobility on regional economic growth, He Xionglang and Shi Shijiao proposed in the Impact of Population Mobility on Regional Economic Growth that population outflow is not conducive to the economic development of the outflow region, and that population outflow plays a significant role in promoting economic development and has a negative effect on economic development. At the same time, population mobility has different levels of impact on the economy of different levels of cities [4]. Therefore, it is particularly important to make detailed research on re population migration and regional economic development for key provinces.

Wang Guixin and Wang Ying found that the degree of regional economic development and the immigration population are mutually cause-and-effect relationship in the empirical study of eastern China [5]. Yao Zhonghong and Zhou Sufang found that the migration will be influenced by the government policy and other external factors to a large extent. If the migration is guided by reasonable policies, the regional differences can be effectively reduced [6]. About the relationship between regional economic development of Northeast of China and immigration population, Yang Lin and Zhang Xinping found out that the northeast of China's economic growth has been adversely affected by population ageing and net migration [7]. Qi Wei, Liu Shenghe and Jin Fengjun pointed out the population problem in the northeast region of China is not in quantity but in quality and structure of the population, including a severe brain drain, population ageing and highly polarized spatial structure of the population [8].

## 3. Research methods

This paper uses the panel data of 12 prefecture-level cities in Heilongjiang Province from 2000 to 2019 for empirical analysis. As the data of Daxing'anling City are significantly lower than the provincial average, they are excluded. Based on the panel data model fixed effect model (OSL) for empirical analysis.

### (1) Interpreted variable

Per capita GDP growth rate (Avegdp). Because this paper explores the impact of population migration on regional economic growth, the per capita GDP growth rate is more rigorous than the simple GDP growth rate, and the results are more accurate.

### (2) Independent variable

Migration Rate (NRMP). The population migration rate expresses the emigration and immigration status of the population, with a positive number indicating immigration and a negative number indicating emigration. Since the number of population migration is not reflected in the statistical yearbook, the population migration rate in this paper is calculated by formula, that is, population migration rate is population growth rate minus natural population growth rate.

### (3) Control variable

Proportion of total imports and exports in GDP (proie). Heilongjiang Province is geographically located on the border of China with Russia, and there are Russian ports. Therefore, the total import and export volume has a crucial impact on economic development. It can also be seen from the data that the

total import and export volume of some prefecture level cities in Heilongjiang Province accounts for 50% of the total GDP all the year round.

Proportion of tertiary industry (proter). Heilongjiang Province is a province with developed primary and secondary industries. The tertiary industry is relatively backward, but the tertiary industry plays a vital role in economic development. Heilongjiang has also been vigorously developing the tertiary industry. Therefore, the industrial structure of Heilongjiang Province also has an important impact on regional economic development.

Proportion of government expenditure in GDP (profe). No matter in which region, government intervention in the economy has a significant role. This paper uses the growth rate of fiscal expenditure to express the degree of government intervention in economic activities.

The growth rate of fixed asset investment of the whole society (assinc). The fixed asset investment of the whole society is a comprehensive indicator to measure the investment scale, proportion and economic growth rate. It plays an important role in the regeneration of fixed assets and the enhancement of economic development strength.

The model is established by variables as follows:

$$Avegdp = \alpha_1 nrmp + \alpha_2 proie + \alpha_3 profe + \alpha_4 proter + \alpha_5 asinc + \mu \quad (1)$$

Variables and data sources

The data in this paper are from China Urban Statistical Yearbook and Heilongjiang Statistical Yearbook. Since the data of population migration are not available, the data in this paper are calculated by the author according to the formula, that is, population migration rate = population growth rate - natural population growth rate. The missing data is replaced and completed with provincial average data.

Through multiple operations on data by stata, the output result is shown in Table 1

Table 1: Stata output

avegdp	Coef.	Std. Err.	t	P>	t	[95% Conf. Interval]
nrmp	.1230708	.0812591	1.51	0.132		-.0373031 .2834448
assinc	.2108965	.0375633	5.61	0.000		.136761 .285032
proie	.1190763	.0485986	2.45	0.015		.0231615 .2149911
proter	-.814968	.1646219	-4.95	0.000		-1.139868 -.4900682
profe	.0028722	.0048114	0.60	0.551		-.0066236 .012368
_cons	34.20992	6.29153	5.44	0.000		21.79287 46.62696
sigma_u	6.695672					
sigma_e	9.884922					
rho	.31451423(fraction of variance due to u_i)					

#### 4. Empirical Analysis

Among the explanatory variables, the population migration rate has a positive correlation effect on the per capita GDP growth rate. The population migration rate didn't pass the 10% significance test. Because the sample data is less than 500, it is considered marginal significant. The coefficient of the population migration rate relative to the growth rate of per capita GDP is 0.123, showing a positive correlation, which can be explained that every 1% increase in the migration population will affect the growth rate of per capita GDP by 0.123%. This shows that the population migration rate has a certain impact on economic development, but it is not strong, so the empirical test conclusion doesn't meet expectations. The main reason is that the migration rate can only reflect the quantity of population migration, but can't reflect the quality of population migration, such as the age structure and education level of the migrant population. According to the data of 12 prefecture-level cities in Heilongjiang Province from 2000 to 2019, it can be found that most of the population migration rate data in Heilongjiang Province are negative, and show a continuous downward trend. When the population migration rate shows a negative growth, the per capita GDP growth rate basically shows a negative or low growth trend.

Among the control variables, the growth rate coefficient of fixed asset investment is positive at the significant level of 1%, which is in line with the expected estimate. The proportion coefficient of total imports and exports to GDP is positive at a significant level of 5%, which is in line with the expected

estimates. Combined with the actual data, it is not difficult to see the economic development advantages of some prefecture level cities in Heilongjiang Province, which rely on import and export, and their import and export ratio is more than 50% all the year round. The proportion coefficient of the tertiary industry is negative at the significant level of 1%. Based on the actual situation of Heilongjiang Province, this paper infers that Heilongjiang Province is more dependent on the primary and secondary industries, and the tertiary industry is in the development stage. According to the existing industrial structure of developed cities, a high proportion of the tertiary industry can better promote economic development. However, as the tertiary industry in Heilongjiang Province is just at the stage of development and is not mature enough, it has a negative impact on economic development. In the long run, the tertiary industry can effectively promote the economic development of Heilongjiang Province after it has been improved and developed in the future. The proportion of government expenditure in GDP is not significant to the growth of per capita GDP. This paper infers that the data difference is caused by the imperfect financial expenditure supervision mechanism in Heilongjiang Province.

## 5. Conclusions and Deficiencies

Based on the empirical analysis of the data of 12 prefecture-level cities in Heilongjiang Province and the actual situation of Heilongjiang Province, the following conclusions are drawn.

Firstly, the impact of population migration on Heilongjiang Province is marginal significant. Considering the actual situation of Heilongjiang Province and the rules of population migration, due to the complexity of the migration population structure, Heilongjiang Province is not only facing the problem of population outflow, but also the problem of "talent" outflow. At the same time, the impact of population migration on Heilongjiang Province is not strong, which confirms that the impact of population migration on the economic development of the third and fourth tier cities proposed by He Xionglang and Shi Shijiao in the Impact of Population Mobility on Regional Economic Growth is smaller than that of the first and second tier cities. The government should set relevant policies to attract and retain labor force and talents from higher education to promote economic development.

Secondly, as a large frontier province, Heilongjiang Province has many import and export trade ports, foreign trade can effectively promote the economic development of Heilongjiang Province, which should make rational use of geographical advantages and vigorously develop foreign trade to promote economic development.

Thirdly, improve the natural population growth rate. In the case of continuous population outflow, the natural population growth rate of Heilongjiang Province is at a negative value all the year round, leading to a serious aging of the population, which undoubtedly increases the burden of the economic impact of population emigration in Heilongjiang Province.

The factors involved in the impact of population migration on regional economic growth are too large, and some data of third and fourth tier cities can't be obtained. This article has the following deficiencies.

Firstly, this paper takes population migration rate as the core variable, which is not comprehensive enough. In exploring the impact of population migration on regional economic development, it is too one-sided to only explore the number of population migration, and the structure of migration population should be considered, such as age structure, education level of migration population and many other factors. Only in this way can we effectively distinguish the characteristics of the migrant population and classify them for heterogeneity analysis, by which it can make the empirical results more accurate and analyze the impact of different types of population migration on regional economic development from the root, such as highly educated talents and labor force.

Secondly, there are many factors that affect economic development. According to the characteristics of Heilongjiang Province, this paper selects landmark data as variables. Due to the unavailability of a large amount of data in Heilongjiang Province, many data can't be selected as variables, which affects the results of empirical analysis.

## 6. Countermeasures and Suggestions

In combination with the actual situation of population migration in Heilongjiang Province, the following policy recommendations are proposed to prevent excessive population migration and brain drain.

Firstly, increase investment attraction as well as provide good and loose policies for enterprises and individuals investing in Heilongjiang Province.

Secondly, encourage local businessmen and college students to stay in Heilongjiang to start businesses, strive for a good venture fund policy, provide a good entrepreneurial environment, and retain talents.

Thirdly, vigorously develop advantageous industrial projects to attract talents, such as the intelligent development of agriculture.

The main purpose of the above suggestions is to create an excellent entrepreneurial environment for Heilongjiang Province and improve employment opportunities. In addition, it can expand the market scale, slow down the problem of population migration, improve the attractiveness to talents, and then improve the growth rate of Heilongjiang Province.

In addition, in combination with the characteristics of Heilongjiang Province, the following policy recommendations are proposed to accelerate economic development.

Firstly, Heilongjiang Province has a high rate of urban greening and good air quality in many cities. And it has snow and ice featured tourist attractions in winter. Therefore, Heilongjiang Province should vigorously develop tourism related tertiary industry, make full use of geographical advantages, develop tourism related service industries, and improve employment opportunities.

Secondly, many cities in Heilongjiang Province border on Russia. According to the data, the import and export trade volume of some cities accounts for up to 50% and shows a rising trend year by year, which has an important impact on the economy of Heilongjiang Province. Therefore, Heilongjiang Province should vigorously develop the relevant industries of Sino Russian trade, provide good investment policies, and improve the possibility of Russian businessmen investing in Heilongjiang Province, by which it can increase employment opportunities and realize rapid economic growth.

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