

# Higher Education Expansion and Population Mobility

Xuechun Wang\*

School of Economics and Management, Inner Mongolia University, Hohhot, 010021, China

\*Corresponding author: xuechun1226@163.com

**Abstract:** China has implemented a higher education expansion policy since 1999, increasing the number of higher education institutions and increasing the number of expansions. This paper uses panel data and intensity double difference method for 31 provinces in China from 1996 to 2020 for the analysis. It is found that the higher education expansion policy has increased the level of population mobility, especially for the southeastern coastal and economically developed regions. Further mechanism tests show that after the implementation of higher education expansion policy, regions increase investment in education and enrich education resources, but also widen the economic gap between regions, triggering factor endowment and neoclassical growth mechanisms, which affect population mobility. This paper suggests increasing funding for higher education in regions with weaker economic development, slowing down the expansion of higher education in economically developed regions, and strengthening inter-university cooperation.

**Keywords:** higher education expansion, population mobility, double differential, economic level

## 1. Introduction

In order to solve economic problems and relieve employment pressure, China has implemented an educational reform policy of expanding the number of students enrolled in undergraduate colleges and universities in general since 1999. The expansion originated from the “Action Plan for Revitalizing Education for the 21st Century” issued by the Ministry of Education on December 24, 1998, which proposed to develop higher education more actively and steadily, and to have a larger expansion in the scale of higher education and an enrollment rate close to 15% by 2010. In 1999, the enrollment increased by 513,200, and the total enrollment reached 1,596,800 million with a growth rate of 47.4%, followed by an expansion of 38.16% in 2000, 21.61% in 2001 and 19.46% in 2002, and by 2003, the number of students enrolled in general colleges and universities in China exceeded 10 million. By 2021, the total number of students enrolled in higher education in China has exceeded 44.3 million, the population receiving higher education has reached 240 million, and the average number of years of education for the new workforce has reached 13.8 years, as shown in Figure 1.

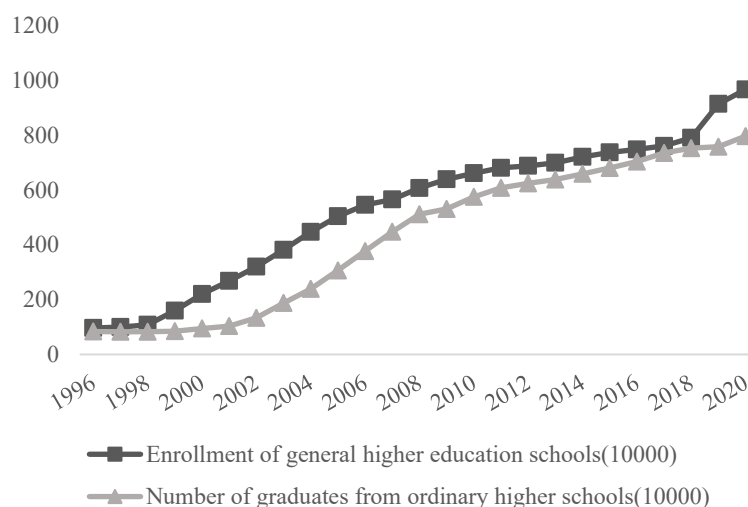


Figure 1: Number of enrollment and graduates of general higher education institutions

Along with the expansion of enrollment that began in 1999, the scale of the number of graduates from

colleges and universities correspondingly began to grow sharply in 2003 and 2004, and the quality structure of the labor force changed significantly, which had a large impact on economic development. At the same time, this group of people with higher education degrees entered the society after normal graduation and chose the place of employment and life, which has a certain impact on the population mobility. Population mobility has always been a hot topic of concern, and with the reform and opening up, China's population mobility has become increasingly frequent, with a large number of laborers pouring into cities, participating in the construction of cities, living in cities, and influencing the economic and social development. Zhang & He et al found that rising house prices would produce an inverted U-shaped drive that attracts and then inhibits labor mobility, and found that the higher the education level, the more vulnerable the labor force is to high house prices [1]. Wang et al found that the population has regional intergenerational mobility preferences when making migration decisions, and a development environment with fair opportunities can be more attractive to the labor force [2]. Meanwhile, economic policies are also a major factor influencing population mobility, and various economic policies of local governments to improve the regional economic development environment through public service means can have a significant impact on the direction of population mobility [3]. Conversely, population mobility can also play a decisive role in regional disparities [4]. As for the effect of higher education expansion on population mobility, most researchers in China have focused on the relationship between education level and human capital accumulation and population mobility.

This paper contributes in the following three ways. First, this paper enriches the study of population mobility phenomenon related to human capital accumulation. Population mobility mainly has a negative effect on human capital in outgoing regions, and population mobility generally weakens human capital accumulation in output regions [5]. At the same time, an important condition for promoting human capital formation and effective allocation is population mobility, which widens the gap arising between developed and less developed regions in terms of human capital [6].

Second, this paper complements the research on the effect of education level on population mobility. Yan found that the mobile population with lower and higher education levels are more inclined to move long distances, and the education level has a "U" shaped relationship with the distance of mobility [7]. Moreover, regional differences in returns to education also have a significant impact on the relative migration probability of labor force with different education levels [8].

This paper also discusses the mechanism of the impact of higher education expansion on population mobility, whereby the impact of graduate employment on the labor market as well as salary levels following college expansion is collated. Wu & Zhao found that although the economy grew rapidly and employment opportunities increased during the college expansion, the expansion led to a decline in the labor force participation rate of new college graduates, an increase in unemployment, and a decline in hourly wages[9]; Li and Whalley J found that China's expansion policy substantially increased the unemployment rate of young college graduates, with the unemployment rate of college graduates in large coastal cities rose less than for college graduates in non-coastal (especially central) regions[10]. More research on the impact on salary levels is available on the education premium. For example, university expansion mainly reduces the higher education premium for the young labor force [11]. Moreover, university expansion may exacerbate the income gap between college and non-college students through labor market discrimination [12].

Human capital investment promotes economic development and labor mobility [13], and higher education is precisely one form of human capital investment. The contribution of this paper lies in the following aspects. First, China's higher education expansion policy has produced a large shock to labor supply in each province, providing a natural "quasi-experimental" opportunity to explore the impact of higher education expansion on population mobility. Second, we use an intensity double difference model to measure the intensity of higher education expansion in terms of the number of colleges and universities owned by each province to examine the impact of higher education expansion on population mobility.

## **2. Research background and theoretical hypothesis**

### ***2.1 Research Background***

To more accurately identify the impact of population mobility levels at the interprovincial level, this paper uses the exogenous shock of higher education expansion policy enacted and implemented by the Chinese Ministry of Education in 1999 as a quasi-natural experiment to systematically examine the impact of higher education expansion on interprovincial population mobility based on an intensity double

difference identification strategy. For a long time, China's higher education resources have differed significantly between regions due to geographical location, national policies and historical factors [14]. As a result, the distribution of colleges and universities in different provinces is very uneven: In 1998, among the municipalities directly under the central government, Beijing had 63 colleges and universities, followed by Shanghai, Chongqing and Tianjin. In other provinces, the region with the most colleges and universities in 1998 is Jiangsu province with 66 colleges and universities, followed by Liaoning, Hubei, Henan, Shandong, Hunan, Hebei and Guangdong, which are basically distributed in the central and eastern parts of China; while the western and minority regions, Yunnan, Guizhou, Inner Mongolia, Xinjiang, Qinghai, Ningxia and Tibet have very few colleges and universities in 1998. Therefore, the impact of the higher education expansion policy enacted and implemented in 1999 on the expansion scale of different regions is heterogeneous, which provides the possibility for the implementation of the double-difference method of intensity in this paper.

## 2.2 Theoretical hypothesis

To improve the validity of the policy assessment in more depth, we use the number of colleges and universities in each province in 1998 to identify the treatment effects of the expansion policy on different provinces: For example, some regions such as more economically developed cities and provinces have relatively more colleges and universities before the expansion, so the higher education expansion policy has a larger impact on the enrollment numbers in these regions. While for some western regions and ethnic minority regions have relatively fewer colleges and universities, the impact of higher education expansion policy on their enrollment size is also smaller.

This shows that there are large differences in the shocks generated by the higher education expansion policy on the level of population mobility in different regions. In particular, it is noted that the higher education expansion policy in China started to be implemented in 1999, and the population mobility due to the choice of place of employment of college students started to manifest in 2003 and 2004, thus, we take 2003 and 2004 as the years in which the actual policy shocks occur in this paper. According to the above mentioned, the identification strategy of this paper is to compare the changes of population mobility levels before and after 2003 and 2004 in provinces with a high number of colleges and universities in 1998 and provinces with a low number of colleges and universities. Therefore, this paper proposes the hypothesis that the greater the expansion of colleges and universities, the greater the impact on the level of population mobility in the areas where colleges and universities are located.

## 3. Model, variables and data

### 3.1 Data sources

The data used in this paper are obtained from the official website of the National Bureau of Statistics, the China Population and Employment Statistical Yearbook and the China Regional Economic Statistical Yearbook. Since the yearbook data are officially released by the National Bureau of Statistics, they have good representativeness and reliability. The data used in this paper are from 1996 to 2020, covering the data of college expansion, population data and macroeconomic data of 31 provincial units in China before and after the implementation of college expansion policy in 1999 and before and after the graduation of college students in 2003. We use data such as the number of colleges and universities and enrollment scale to measure the level of college expansion; the number of household registration population and year-end resident population to measure population flow data; and macroeconomic data covering GDP per capita, housing price, price level, and medical level.

### 3.2 Model setting

This paper adopts the exogenous shock of the "higher education expansion" policy enacted by the Chinese government in 1999 as a quasi-natural experiment, and examines the impact of higher education expansion on population mobility in each province based on the identification strategy of double difference of intensity (DID) normatively.

$$PM_{it} = \beta_0 + \beta_1 Treat_i * Post_t + \sum_{j=1}^J \alpha_j X_{it} + \delta_i + \theta_t + \varepsilon_{it} \quad (1)$$

$PM_{it}$  is the explanatory variable, denoting the province  $i$  in the first  $t$  year level of population mobility; we distinguish the control group from the control group by the number of colleges and

universities that each province had in 1998.  $Treat_i$ , which takes the value of 1 when the province is the control group and 0 for the control group;  $Post_t$ , takes the value of 1 when the year is 2003 or later and 0 for other years.  $X_{it}$  are control variables that are associated with population movement and may affect population movement;  $\delta_i$  is for province fixed effects, used to control for differences between certain provinces that do not vary over time;  $\theta_t$  is a time fixed effect, used to control for time-varying shocks at the macro level.  $\varepsilon_{it}$  is the random error term.  $\beta_1$  denotes the effect of higher education expansion on population mobility.

### 3.3 Data description

#### (1) Explained variables

The explanatory variable in this paper is the level of population mobility, which is mainly measured from the dimension of population size. Mobile population refers to the fact that the place of permanent residence does not coincide with the place of household registration in a certain period of time. The measure of mobile population in this paper is: population mobility level = total resident population at the end of each province - number of household registration population in each province. When the population mobility level is greater than 0, we judge that the province has a net population inflow.

#### (2) core explanatory variables

In the double difference estimation, the core explanatory variables are the province dummy variables  $Treat_i$  The time dummy variable  $Post_t$  of the interaction term.  $Post_{2003}$  denotes the year 2003 as the shock year and  $Post_{2004}$  denotes taking 2004 as the shock year.  $Treat_1$  The relative growth of the number of colleges and universities is expressed as the ratio of the number of colleges and universities in a province in a given year minus the number of colleges and universities in 1998 to the number of colleges and universities in 1998, which is assigned to zero when the value is negative due to the absence of the reduction policy.

#### (3) Control variables

To avoid the problem of omitted variables as much as possible, with reference to the existing literature, this paper controls for a series of characteristic variables that may affect population mobility in the model. They mainly include: (1) the level of economic development ( $\ln(\text{PerGdp})$ ), which is expressed as the per capita gross regional product of each province. (2) Government size (Gov), expressed as the share of local fiscal general budget expenditure in each province to the GDP of that region. (3) Price level (CPI), expressed as the consumer price index for residents in each province, through which the extent to which changes in retail prices of consumer goods and prices of service items affect residents' real cost-of-living expenditures and thus the labor force's willingness to live in the region can be analyzed. (4) Habitat living standard (Living), expressed as the average sales price of commercial housing in each province, the level of housing price has been a popular issue of concern for Chinese people, which naturally has an impact on people's choice of region to live and work. (5) Medical level (Medical), expressed by the number of practicing (assistant) physicians (per 1,000 people) per unit of population in each province (city). The level of medical care is a guarantee for people's healthy life and is an important factor for people to consider when choosing a place to live.

#### (4) Data description

Table 1: Descriptive statistics of the main variables

Variables	Definition	Sample size	Average value	Standard deviation	Minimum value	Maximum value
PM	Level of population movement (10,000 people)	775	20.55	543.68	-1592.42	3214.60
College	Number of Provincial Colleges and Universities (Number)	775	63.68	38.33	3.00	167.00
$\ln(\text{PerGdp})$	GDP per capita (RMB)	775	9.89	0.03	7.62	12.01
CPI	Price level	775	102.30	2.37	96.40	111.60
Living	Habitat living standard (RMB/m <sup>2</sup> )	775	4645.37	4545.57	744.00	37665.00
Gov	Government Size	775	0.23	0.18	0.05	1.35
Medical	Medical level	775	2.03	0.76	0.91	5.85

This paper investigates the impact of higher education expansion on population mobility and its

mechanism of action by constructing panel data for 31 provinces in China from 1996 to 2020. The data used are mainly from the China Population and Employment Statistical Yearbook and the China Regional Economic Statistical Yearbook in previous years, and the descriptive statistics of the main variables are shown in Table 1.

#### 4. Empirical results

##### 4.1 Basic results

This paper applies the DID method to estimate whether higher education expansion has an impact on population mobility in each province of China. The impact of higher education expansion on population mobility is first reported, and the results of the benchmark regressions are presented in Table 2. In Table 2, columns (1) and (2) present the results of 2 regressions with 2003 and 2004 as the year of the shock, respectively. The regression coefficients of  $Treat_i * Post_t$  are 171.081 and 163.959, respectively, which are significant at the 1% level, indicating that after the implementation of the higher education expansion policy, the experimental group provinces have an increased level of population mobility compared to the control group provinces by about 1.710.81 million people in 2003 and about 1.639.59 million people higher in 2004. The above analysis shows that the higher education expansion policy has an elevating effect on the level of population mobility between provinces, which indicates that the expansion policy helps to increase the labor force population in the provinces.

Table 2: Baseline regression results for the effect of higher education expansion on population mobility

Explained variables	Level of population mobility	
	(1)	(2)
Explanatory variables		
<b><math>Treat_i * Post_t</math></b>	171.081***	163.959***
	(4.09)	(4.13)
<b>ln(Pergdp)</b>	-923.590***	-920.159***
	(-9.12)	(-9.15)
CPI	7.231	7.546
	(0.64)	(0.67)
Living	0.052***	0.051***
	(7.99)	(7.98)
Gov	405.265**	387.002**
	(2.57)	(2.46)
Medical	139.964***	139.152***
	(2.79)	(2.77)
Constant term	7598.371***	7532.700***
	(5.45)	(5.44)
Year fixed effects	Yes	Yes
Provincial fixed effects	Yes	Yes
Sample size	775	775
R2	0.739	0.741

Note: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

##### 4.2 Robustness test

To further enhance the reliability of the conclusions of this paper, a series of robustness tests are conducted in this paper. We are describing the level of higher education expansion by the number of colleges and universities, but at the same time, from the 1990s to 2000, China simultaneously implemented another policy regarding the reform of colleges and universities, which was the wave of college mergers. 2000 Symposium on Merger of Some Colleges and Universities was held in Beijing, implying that most of the colleges and universities completed their mergers in 2000, affecting the calculation of the number of colleges and universities in 2000. In the year of 2020, affected by the new coronavirus pneumonia, China took closed management measures, which affected the normal flow of population in that year. As a result, this paper excludes the 2000 sample in column (1) and the 2020 sample in column (2) in Table 3, and the regression results show that the higher education expansion policy still contributes to population mobility.

Table 3: Robustness tests

Explained variables	Level of population mobility	
	Excluding the disruption of college mergers	Exclusion of the new crown epidemic
Sample Range		
Explanatory variables	(1)	(2)
$Treat_i * Post_t$	162.774*** (3.86)	174.443*** (3.86)
$\ln(Pergdp)$	-932.439*** (-8.84)	-935.611*** (-8.82)
CPI	6.432 (0.58)	8.175 (0.64)
Living	0.056*** (7.80)	0.051*** (7.74)
Gov	452.548*** (2.87)	378.104** (2.32)
Medical	155.874*** (3.08)	146.716*** (2.79)
Constant term	7656.590*** (5.46)	7599.078*** (4.87)
Year fixed effects	Yes	Yes
Provincial fixed effects	Yes	Yes
Sample size	744	744
R2	0.730	0.743

Note: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

### 4.3 Heterogeneity test

Table 4: Heterogeneity test

Explained variables	Level of population mobility				
	Regional Heterogeneity		Heterogeneity of economic development levels		
	Southeast Coastal Region	Other areas	Low	Medium	High
	(1)	(2)	(3)	(4)	(5)
$Treat_i * Post_t$	437.818*** (4.44)	15.133 (0.56)	18.963 (0.43)	29.881 (0.86)	496.555*** (5.40)
$\ln(Pergdp)$	-0.0027*** (-9.17)	-488.826*** (-5.84)	-600.199** (-2.21)	-77.270 (-0.94)	-317.663* (-1.93)
CPI	39.631 (0.84)	-4.199 (-0.42)	8.595 (1.05)	0.718 (0.10)	17.187 (1.06)
Living	-0.029** (-2.28)	0.035*** (5.96)	0.086 (1.01)	0.020* (1.75)	0.005* (1.74)
Gov	-0.0057*** (-3.13)	439.198*** (3.10)	1371.454* (1.69)	459.810*** (5.18)	96.000 (1.20)
Medical	71.896 (0.89)	-76.628 (-1.28)	213.767 (0.84)	45.952 (1.21)	29.638 (1.41)
Constant term	0.00023*** (3.90)	5834.920*** (4.55)	3671.138* (1.91)	393.562 (0.36)	1629.821 (0.73)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Provincial fixed effects	Yes	Yes	Yes	Yes	Yes
Sample size	150	625	259	258	258
R2	0.883	0.649	0.147	0.977	0.987

Note: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

For the different characteristics of the economic development level of the regions where the universities are located, this paper discusses the heterogeneity of the policy effects using the same set of DID estimation methods as in Table 2. Table 4 shows the results of the heterogeneity analysis based on

the grouping of regional characteristics and economic development level characteristics. Firstly, this paper divides the sample into two groups according to the geographical area for the same DID estimation, and columns (1) and (2) show the grouped regression results, the regression coefficient of southeast coastal provinces is about 437.818, which is significant at the 1% level, while the regression coefficients of other regions are not significant, indicating that the college expansion policy only promotes the level of population mobility in southeast coastal areas, while the effect on the level of population mobility in other regions It is not significant. Table 4 also explores the heterogeneity of college expansion policy effects in terms of economic development levels. In this paper, the sample is divided into three groups of low, medium and high according to the level of GDP per capita in each province, and then sub-sample regressions are conducted. As can be seen from columns (3), (4) and (5), the regression coefficients of the samples with low and medium levels of economic development are not significant, and the regression coefficient of the samples with high levels of economic development is about 496.555, which is significant at the 1% level and much higher than the regression coefficients of the samples with low and medium levels of economic development. This implies that the expansion of higher education has led to greater levels of population mobility in regions with high levels of economic development, bringing more labor and adding to the development of the region, while adding little to the regions with weaker economic development, which may exacerbate the contradiction of disparities between regions.

## 5. Mechanism analysis

According to the aforementioned analysis, the 1999 higher education expansion policy had an impact on the level of population mobility between provinces after 2003 and 2004, with a particularly large additive impact on the level of population mobility in coastal and economically developed regions. So, in which way was this increase in the level of population mobility triggered? What is the mechanism of its action? Different mechanisms imply quite different policy insights. Thus, an exploration of the mechanisms of population mobility levels can not only provide insight into the effects of higher education expansion policies, but can also play an indispensable role in future policy formulation.

First of all, people choose where to live considering the local economic development, environment, medical conditions, and optimism about the future development of the area where they live, and naturally consider what kind of education their future generations will receive. According to the factor endowment theory, people certainly tend to choose to settle in areas with abundant educational resources and higher education levels [15]. Secondly, according to neoclassical growth theory, the economic gap between two regions affects the population movement between the two regions [16].

Table 5: Mechanism analysis

Explained variables	Education Funding	Regional GDP Gap
Explanatory variables	(1)	(2)
$Treat_t * Post_t$	0.154*** (9.63)	0.058*** (3.32)
$\ln(Pergdp)$	0.647*** (16.82)	1.034*** (7.78)
CPI	0.006 (1.48)	-0.002 (-0.17)
Living	0.000* (1.86)	0.000*** (4.18)
Gov	1.403*** (8.21)	-0.188** (-2.19)
Medical	-0.005 (-0.24)	-0.002 (-0.12)
Constant term	15.962*** (28.07)	-2.095 (-1.08)
Year fixed effects	Yes	Yes
Provincial fixed effects	Yes	Yes
Sample size	775	775
R2	0.994	0.985

Note: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Thus, the first possible mechanism proposed in this paper is that higher education expansion policies

enrich local educational resources, and the abundance of educational resources attracts people to move. The second mechanism proposed is that higher education expansion widens the economic gap between the place and other regions, which in turn may affect the level of mobility in the place. In this paper, we analyze how higher education expansion policies affect educational resources and regional economic disparities, and thus the level of population mobility, from the perspectives of both education funding and regional GDP disparities.

The results in Table 5 show that the higher education expansion policy does have a positive effect on education spending and inter-regional GDP in each province, i.e., the policy enriches local education resources and widens the economic gap between regions. Thus, the higher education expansion policy has increased the level of population mobility in each region through factor endowment and neoclassical growth mechanism.

## 6. Research conclusions and policy recommendations

China has implemented a higher education expansion policy since 1999, increasing the number of institutions of higher learning and expanding the number of students who have the opportunity to leave their hometowns to study elsewhere. Due to regional differences, the degree of expansion varies across regions, providing a natural "quasi-experimental" opportunity to explore the impact of this policy on cross-provincial population mobility. This paper uses panel data for 31 provinces in China from 1996 to 2020 and the intensity double difference method to conduct the analysis. It is found that, firstly, the higher education expansion policy increases the level of population mobility, and after the implementation of the higher education expansion policy in 1999, the level of population mobility in the treatment group provinces increases by about 1,710,801,000 and 1,639,590,000 in 2003 and 2004, respectively, compared to the control group provinces. Second, a heterogeneity analysis reveals that the higher education expansion policy only has a significant effect on the level of population mobility in the southeastern coastal and economically developed regions, while it does not have a significant effect on the rest of the country. Finally, further mechanism tests show that after the implementation of the higher education expansion policy, localities increase investment in education and enrich educational resources, but also widen the economic gap between regions, thus affecting the level of population mobility in each locality.

The research in this paper implies that higher education expansion policies do increase the level of population mobility across provinces and bring more working people to each region. This has very important implications for the current reform of China's higher education enrollment system and educational resource allocation: First, to increase funding for higher education in the central and western, less economically developed regions to attract more research talents to join higher education careers in such regions. At present, the impact of higher education expansion on population mobility has a siphon effect, with economically developed regions attracting more students from other regions to study and work due to higher education expansion, while other regions are also expanding higher education but students are less willing to stay and work after graduation, which does not bring a dividend of positive population mobility to the local area. Second, for economically developed regions, the quality and threshold of enrollment should be improved to slow down the expansion rate. In recent years, the number of college graduates has reached record highs, and according to the data released by the Ministry of Education, the scale of college graduates reached 10.76 million in 2022. The number and requirements of college graduates do not match well with the number and requirements of jobs, and the employment situation is severe. Thirdly, strengthen the cooperation and communication between higher education institutions. Inter-provincial colleges and universities should strengthen communication and information mutual assistance and increase discipline-to-discipline exchange activities. Inter-provincial colleges and universities should strengthen the discipline-to-discipline mouth-to-mouth support and contract student exchange programs in a directed manner. Broaden students' horizons, enrich their learning life and improve the quality of their education level.

## References

- [1] Zhang L, He J, Ma RH. How do housing prices affect labor mobility? [J]. *Economic Research*, 2017, 52(8):155-170.
- [2] Wang W.T., Xie J.S., Zhang L. Regional intergenerational mobility preferences of population migration: micro evidence and influence mechanism [J]. *Management World*, 2019, 35(7):89-103+135.
- [3] Fu Wenlin. Structural barriers to population mobility: An empirical analysis based on competition in public spending [J]. *World Economy*, 2007(12):32-40.



- [4] Yao Zizhong, Zhou Sufang. *Labor mobility and regional disparities [J]. World Economy*, 2003(4):35-44.
- [5] Ruan Rongping, Liu Li, Zheng Fengtian. *Research on the impact of population mobility on human capital in the output place [J]. China Population Science*, 2011(1):83-91+112.
- [6] Hou Li. *The impact of labor mobility on human capital formation and allocation [J]. Journal of Population*, 2003(6):34-39.
- [7] Yan Yinguan. *A study on the influence of education level of migrant population on cross-regional mobility decision [J]. China Population Science*, 2020(1):90-101+128.
- [8] Xing Chunbing, Jia Suyan, Li Shi. *Regional differences in returns to education and their impact on labor mobility [J]. Economic Research*, 2013, 48(11):114-126.
- [9] Wu, Wu, Zhao, Quan. *College expansion and employment of college graduates [J]. Economic Research*, 2010, 45(09):93-108.
- [10] Li S, Whalley J, Xing C. *China's higher education expansion and unemployment of college graduates [J]. China Economic Review*, 2014, 30: 567-582.
- [11] Ma Guangrong, Ji Yang, Xu Jianwei. *How does university expansion affect the higher education premium? [J]. Management World*, 2017(8):52-63
- [12] Xu Shu. *The impact of labor market discrimination and college expansion - Structural estimation based on a signaling game model [J]. Economics (Quarterly)*, 2010, 9(4):1519-1538.
- [13] Fu Y. *The significance of human capital investment on the transfer of surplus rural labor - an analysis based on population mobility and labor market [J]. Population and Economy*, 2004(3):55-59.
- [14] He Xiaogang, Luo Qi, Chen Jinling. *High-quality human capital and industrial structure upgrading in Chinese cities: Evidence from the "college expansion"[J]. Economic Review*, 2020(04):3-19.
- [15] Filipa Sá. *Immigration and House Prices in the UK [J]. The Economic Journal*, 2015, 125(587): 1393-1424.
- [16] Sjaastad Larry A. *The Costs and Returns of Human Migration [J]. Journal of Political Economy*, 1962(5)