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POPULATION MOVEMENTS AND THE ENVIRONMENTAL POTENTIAL POPULATION IN CHINA

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ABSTRACT: This paper inquires firstly into the influence of environmental potential population on population movements in China. We think that there are intimate relationships between the changes of the environmental potential population and the population movements: from southeast to northwest, from the coastland to the borderland in the early 30 years of the founding of the People's Republic of China and the reversion of direction of population movements in recent ten years. Then we come to the conclusion that it has been inappropriate for a large-scale population movement of reclaiming and cultivating wasteland, because the actual population has universally surpassed the environmental potential population in most areas of China. But it is still appropriate and necessary for these movements, such as intelligence or science migration of population, limited population movement within the area of some provinces, population concentration on small towns and temporary fluidity of population.

KEY WORDS: population movement, environmental potential population, receiving areas, sending areas

The environmental potential population is the maximum of population which can make ecosystem in an area circulate and its socioeconomic environment develop in good conditions under certain consumption level. China is a country with a vast territory and a long history. And there are great differences between environmental potential population of each area and its actual population, These differences have a great influence upon population movements in China. It is highly important to prone into the relationship between the environmental potential population and population movements on the basis of China's actual situation for understanding the tendency and dynamics if population movements in China.

I. THE INFLUENCE OF ENVIRONMENTAL POTENTIAL POPULATION ON POPULATION MOVEMENTS

It was estimated that the net population of interprovincial migration was nearly 30 million annually, about 9 million from 1954 to 1979. These movements occurred approximately from southeast to northwest, from the coastland to the borderland, from the densely populated areas to the scarcely populated areas, and from the developed areas to the underdeveloped areas. The following figures can illuminate the regularity obviously. The migration population of some provinces, autonomous regions and municipalities from 1954 to 1979 were (unit: 10 thousand): Xinjiang 280, Heilongjiang 650, Inner Mongolia 310, Yunnan 135, Jiangsu −100, Henan −300, Shanghai −130. The reasons for this regularity were not only the effects of society, economy, policies, but also the influence of the environmental potential population. In the early 30 years of the founding of the People's Republic of China, the vast borderland had less population, though it was rich in natural resources, and there was deficiency in its actual population in comparison with its environmental potential population. Most of China's major cultivable wastelands distributed there, for example, the Sanjiang Plain, Hulun Buir Plateau, the Da Hinggan Nountain region, the northern part of Junggar Basin, the northern part of Tarim Basin, the Ili River valley and so on. These cultivable wastelands provided natural wealth for carrying a large number of population. On the contrary, the coastland and the middle part of China were populous despite the comparatively higher level of economic development; the actual population of most areas there had come up to or exceeded the environmental potential population. Because it was basically a natural economy society at that time, the problem of dressing warmly and eating their fill in the borderland was comparatively easily solved. Therefore we take it for granted that the population moved from the coastland where the actual population had exceeded the environmental potential population to the borderland where the actual population was under the environmental potential population.

In the early 30 years of the founding of the People's Republic of China, Heilongjiang Province had been the largest receiving area consistently. From 1954 to 1981, its total population had an increase of 20.41 million, among which the growth of migrant was 6.67 million, with the addition of a quantity of illegal immigration population. The total population of migration into Heilongjiang was considerable, which was related to its environmental potential population at that time. Heilongjiang had abundant land resources, was rich in reclaimable wasteland. Its total area was over 0.46 million km^2, about 115.3 million acres, among which the cultivated land 21.4 million acres, forest land 5.56 million acres, grazing land 9.9 million acres, cultivable wasteland 9.1 million acres. Its arable land, cultivable wasteland were the most and the forest resources were also the first in China. Its mineral resources, especially oil resources were of great importance to China. Its population density was 25 persons per km^2 in 1953 and 43 persons per km^2 in 1964, being far lower than the

average level of the whole country at that time, Obviously its actual population was under its environmental potential population. Because there were so many favorable conditions to receive more population, it became the largest receiving area in the whole country.

A great change of the interprovincial population migration has taken place since 1980. The directions of population migration have reversed. The receiving areas and the sending areas have taken a turn (See Table 1).

Table 1 Average annual rate of interprovincial population migration (1982 to 1987, ‰)

	Immigration	Emigration	Net migration
Jiangsu	1.5	1.1	+0.4
Shandong	1.4	0.9	+0.5
Hebei	2.2	1.3	+0.9
Shanghai	6.1	1.3	+4.8
Inner Mongolia	1.7	2.0	−0.3
Heilongjiang	1.2	2.7	−1.5
Xinjiang	3.0	3.5	−0.5
Yunnan	0.6	1.1	−0.5
Qinghai	1.4	5.0	−3.6

Source: (Population Research) Bimonthly, No.1, P2, 1990)

For example, Shanghai City, Jiangsu, Shandong and some other provinces which were the most important interprovincial sending areas have become interprovincial receiving areas. The net population of immigration were: Shandong 1.27 million (or 0.83 million) and Beijing 0.89 million from 1980 to 1987; Jiangsu 1.34 million and Shanghai 0.76 million from the middle 1970s to 1987. Meanwhile Heilongjiang, Inner Mongolia, Qinghai, Yunnan, Gansu and some other provinces which were the most important interprovincial receiving areas have become interprovincial sending areas. After 1980, the net population of emigration were: Heilongjiang 0.45 million Xinjiang nearly 0.1 million.[1]

The reasons for the reversion of population movement directions include the following aspects: 1. since the beginning of reform and opening up with the development of socialist commodity economy the migration has become more freely and the disparity between the level of economic development of coastland and that of borderland has remained as before, therefore, the unidirectional population migration has become dual and multi−direction gradually; 2. the return of the political migrants; 3. talented personnel yearning for appropriate jobs; 4. the administration faults in migrant settlement of the borderland; 6. the in-

fluence of the environmental potential population, etc. The influence of the environmental potential population will be emphatically discussed as follows.

As the mechanical and natural population growth had continued for a long time in the borderland, the relationship between its actual population and its environmental potential population has changed basically since the beginning of the 1980s. The actual population of most areas in the borderland have exceeded their environmental potential populations. In 1987 the population density per square kilometre in Ningxia, Gansu, Inner Mongolia, Xinjiang reached 65.5 persons, 46.6 persons, 17.5 persons and 8.7 persons respectively. According to the critical density of population pressure which are 7 persons per square kilometer in arid zone and 20 persons per square kilometer in semiarid zone (put forward in 1978 by the United Nations Desert Conference), the actual population density of most areas of the four provinces and autonomous regions had gone beyond the limits. So many population ecological problems have emerged.

1. Vegetation was destroyed seriously. In Qaidam Basin, as population growth caused an increase in fuel needs, nearly 4 million acres of psammophytic sand vegetation was destroyed. According to the present cutting speed, the remaining part of 1.6 million acres will be destroyed by the end of the 20th century. Because a large-scale reclamation and cutting fire wood have continued for a long time, the diversiform-leaved poplars on the banks of the Tarim River have been destroyed seriously and desert area has been expanding continuously. The grasslands in North China and Qinghai, Xizang have been degenerating with each passing day. Now the grass yield have decreased by 30% to 50%, even 60%, the period of the 1950s. The quality of forage grass also has been worsening, grasses and legume have been decreasing while rankgrasses and poisonous weeds have been increasing.

2. The dynamic equilibrium of water resources was destroyed. From the 1950s to the early 1980s, because of the population growth and reclamation, the needs of water resources increased in the middle and upper reaches of the Shiyang River, and the water resources of Minqin Oasis in the lower reaches of the Shiyang River decreased and the groundwater table declined year by year. So did the Tarim River and the Shulehe River.

3. The desert area expanded and the cultivated area shrank. The desert area expanded continuously in Xinjiang, Gansu, Ningxia, Qinghai and elsewhere where the moving speed of some sand dunes reached 10 m per year[2] owing to excess reclamation. Therefore the cultivated area was decreasing continuously, which amounted to over 0.25 million acres and 0.13 million acres in Inner Mongolia and Xinjiang respectively in 1987.

Heilongjiang Province, had been the largest receiving area. Its population attained 74 persons per km^2 in 1987 as the mechanical and natural growth had continued for many years. Excess population growth had brought about ecological disturbance, depletion of soil fertility and serious soil erosion. For instance, the Sanjiang Plain had been reclaimed for many years, its ecological balance disturbed, rainfall decreased, climate became dry, wind hazard intensified. At present, the organic matter in the surface layer (20 cm) of the

newly reclaimed wasteland in the northern part of this province is 7% to 8% while it is about 4% in the previously reclaimed land of the middle areas, only about 2% of the southern areas, even 1 per cent of someplace, the soil organic matter has been decreasing by 1‰ to 2‰ per year. The area of soil erosion is over 9.9 million acres. The black earth layer is becoming thinner by 1 cm per year.

Since the beginning of the reform and opening, the advantageous conditions of economic geography have been fully utilized in eastern coastland where the environmental potential population has comparatively increased by reforming economic setups, regulating the industrial structure, developing township industry and export-oriented economy. Since 1980, the actual population either the eastern part, or the middle and western part all exceeded their environmental potential population. After initially dressing warmly and eating their fill, the further richening conditions in the eastern China are more favorable than those in the western China. Thus, the change of the relationship between the environmental potential population and the actual population is an important cause of the reversion of population movement. Influenced by the environmental potential population, in the vast eastern and middle part of China the rural population are concentrating on the nearby small towns. As the reform and open policies were put into effect, a large number of vigorously developing township enterprises have been promoting the growth of many small towns. The small towns whose processing industry and tertiary industry are comparatively flourishing, are different from its surrounding rural areas in socioeconomic system and ecosystem. Because the environmental potential population of small towns are far larger than that of their surrounding rural areas, a large number of the rural population has been attracted to be concentrated on small towns. For instance, the rate of mechanical population growth per year in nearly 40 county towns of the middle and southern part of Hebei Province is 30‰, the highest 60‰ to 75‰. Population concentrating on small towns has become a chief migratory flow, which seems to continue for a long time, because the development the small towns and township enterprises are now in course of expanding and flourishing.

II. THE ENVIRONMENTAL POTENTIAL POPULATION AND THE TREND OF POPULATION MOVEMENT

The environmental potential population is different from the population maximum which can be supported in an area. If the consumption level is lowered or at the cost of destroying ecological balance and socioeconomic environment, more population than the environmental potential population can be supported . If the actual population of an area has reached or exceeded its environmental potential population, it will be inappropriate to receive a large number of population of immigration, otherwise the population pressure upon ecosystem and socioeconomic environment will become heavier, the existing

demographic–ecological problem, demographic–social problems and demographic–economic problems will be worsened and the development in the future will be harmfully influenced.

The phenomenon of surplus labour force which has universally existed in rural and urban areas of China is the obvious expression of the fact—actual population exceeding the environmental potential population. According to the sample investigation by China's Statistical Bureau, the total rural surplus labour force was over 60 million , accounted for 15.7% of the total labour force.[3] It was the essential reason to cause enormous mobile population without definite purpose, There was also a large number of surplus labour force in urban areas. The rate of occupation pursuers was 1.9% in 1984, 2.0% in 1987 which is still continuing to go up for the time being.

Borderland as a sending area, its population has exceeded its environmental potential population. Coastland as a receiving area, its population has exceeded its environmental potential population, too. In the early 1980s the environmental potential population of coastland comparatively increased and the immigration of population promoted its economic development in a short time. But the receiving of population produced reaction and caused its labour force incapable of being fully employed soon. Particularly, the enormous mobile population without definite purpose which had exceeded the carrying capacity exerted extreme pressure on the socioeconomic environment and ecosystem. Because the environmental potential population is limited and the outside population is continuing to increase, the population replacement phenomenon has taken place in the coastland. For example, in the coastal Cangzhou of Hebei Province, the outside surplus labour forces began to gather, and in the meantime the local labour force flowed into Beijing, Tianjin and other cities enormously. The actual population in the central section of China has also exceeded its environmental potential population. Such provinces as Shanxi, Anhui, Jiangxi, Henan, Hunan, etc. which have a large number of surplus population and many demographic–ecological problems belong to sending areas.

Because the actual population in most areas of China have exceeded their environmental potential population, large–scale population movements to reclaim and cultivate wastelands will be impossible. Of course, it will be possible for northeast, northwest and southwest China to receive some outside labour force in a short time of the future on account of discovering new natural resources and increasing technical competence. Intelligence or science immigration of population and limited population movement within certain province are still feasible and necessary. It will be of significance in carry out some reasonable talent movement and dissemination of technology and information. Intelligence or science immigration of population could settle the problem of talent shortage in the development of certain area and is unlikely to exert excess pressure on its ecosystem and infrastructure.

The limited population movement within certain province is worthy to spread in some

areas. In 18 counties of the middle part of Gansu Province, the natural conditions are not favorable while their population pressures are high. In 1983 the population density was 82.19 persons per km^2, which had increased by 114.42% over 1949.[4] This increase rate was higher than that of the whole country. The actual population had far exceeded the environmental potential population, which caused ecological disturbance, low and unstable output of grain and shortage of forage, fuel and fertilizer, consequently becoming a well-known poor area. However the irrigated area in Hexi Corridor and the new exploited and irrigated area by diverting water from the Huanghe (Yellow) River in the middle part of Gansu Province which had more cultivated area and less population could receive a certain amount of population. Gansu Province has carried out population movement in a planned way. After a few years' practice, most immigrants can live and work in peace and contentment, basically settling down in one year, dressing warmly and eating their fill in two years and beginning to be well-to-do in three years.

Besides the limited population movement in some areas and the intelligence or science migration of population, the temporary movement of population is also feasible. The reasons are as follows: 1. The temporary movement of population could solve the problem of labour force shortage in a short time in the development of some areas and could also be adjusted and scattered according to the change of circumstances. 2. The temporary movement of population is beneficial to the areas where the mobile population flows out. Owing to the surplus population flowing out emporarily the problem to dressing warmly and eating their fill in a poor area could be solved and a part of capital deeded for further development could be obtained. The advanced science and technology and the experience of administration could be brought back and the chance to recover and rebuild their ecosystem could be gotten also.

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