

The Impact of the Demographic Dividend on the Economy

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Abstract. Demographic dividend means abundant labor supply, huge potential domestic consumption market and abundant financial support for a country's economic development. However, with the passage of time, the demographic dividend will continue to change. This paper takes China as an example to study the impact of demographic dividend changes on economic development. At present, China is gradually entering an aging society, and the window period for the release of the demographic dividend has begun to close, which means that the benefits brought by the demographic dividend to China's economic development are gradually disappearing. This paper attempts to study the relationship between the demographic dividend and economic development, and provide relevant policy suggestions through the research, so as to provide specific policy suggestions for extending the demographic dividend and promoting the positive impact of the demographic dividend on economic development.

Keywords: International competitiveness, Demographic dividend.

1. Introduction

Demographic dividend is an inescapable topic in economic development. "MADE IN CHINA" is a special label for China's development in the past few decades. Most scholars believe that the phased cheap and abundant labor force brought by the demographic dividend factor is one of the reasons why China has a strong international competitiveness and occupies a place in the world[1]. It is true that since China entered the demographic dividend window period, the decline in the dependency ratio has provided sufficient and cheap labor supply for economic development and promoted the rapid development of labor-intensive industries.

But with the continuous development of China's economy, the demographic dividend is also changing. The data shows that the change of age structure has gradually started since 1999, and the aging stage is gradually approaching. In 2010, the proportion of China's working-age population began to decline, which also means that the benefits brought by the demographic dividend to the Chinese economy are gradually disappearing. According to the change trend of China's total dependency ratio, it can be seen that China's dependency ratio has gradually started to rise after 2016, which means that China's demographic dividend window is gradually closing, and the disappearance of the demographic dividend will bring about labor supply, consumption and savings. The changes will have an impact on China's economic development[2]. This paper studies how the demographic dividend affects economic development, which has important practical significance.

2. Demographic Dividend and Economic Development

2.1 The demographic dividend

Demographic dividend refers to the fact that when the population structure experiences the stage of "low dependency ratio" in the development process, it will bring some positive effects to the economy, that is, the "dividend" to the economy derived from changes in the population structure.

The demographic dividend was proposed by Mason (1997)[3]. Mason expressed the economic phenomenon of the demographic dividend as an age structure of "large in the middle and small at the two ends". In his research, he used this economic phenomenon to explain the economic growth miracle of East Asia. The formal introduction of population was in the United Nations Population Fund (1998), after which it was known and applied by the world.

The concept of the second demographic dividend emerged with the disappearance of the demographic dividend in various countries. Lee et al (2005) [4] and Mason (2004)[5] expanded the connotation of original demographic dividend when they studied the disappearance of the demographic dividend. They put forward the "second demographic dividend". They believe that an increase in the dependency ratio will stimulate the accumulation of capital brought about by the increase in pension fund savings, and at the same time increase the stock of human capital in society. A. Mason et al (2007)[6] also believed that the second demographic dividend will be caused by the aging of the population, which will bring a second positive impact on economic development. in subsequent research[7]. Ronald Lee, Andrew Mason (2010)[8] measured the second demographic dividend through a model, and concluded that the second demographic dividend has a greater positive effect on the economy than the first demographic dividend.

General research uses the total dependency ratio to measure China's first demographic dividend, which refers to the ratio of the non-working-age population to the working-age population in the population. However, it is not accurate to use the non-working-age population and the working-age population as a comparison indicator in the total dependency ratio. The indicators to measure the demographic dividend for the revision of the total dependency ratio include the effective dependency ratio and the ability dependency ratio.

The effective dependency ratio refers to the ratio of the effective consumption population to the effective productive population. The effective dependency ratio takes the employed population of students and the unemployed as an indicator to measure the effective productive population, and uses the difference between the total population and the employed population to measure the effective consumption population.

The formula for calculating the effective dependency ratio is: $r = \frac{P-L}{L} \times 100\%$,

Among them, dr is the effective dependency ratio, P is the total population, and L is the employed population.

The ability dependency ratio further revises the effective dependency ratio, because the demographic dividend not only involves the population quantity, but also the population quality, so the ability dependency ratio takes the population quality into consideration.

The calculation formula of ability dependency ratio is: $r = \frac{P-L}{L \times h} \times 100\%$,

Dr is the effective dependency ratio, P is the total population, L is the employed population, and h is human capital, which is measured by the average years of education of the employed population. This paper uses the ability dependency ratio as a measure of the demographic dividend.

2.2 Economic development

Because the meaning of economic development is too broad, this paper uses the international competitiveness of manufacturing industry as a representative indicator of economic development.[9]

There are many index systems to measure the international competitiveness of the manufacturing industry, the main analysis index, on this basis, this paper adopts the comprehensive index to measure the international competitiveness of the manufacturing industry.[10]

(1) The international market share (CW) = a country's manufacturing exports / the world's total manufacturing exports.

(2) The Revealing Comparative Advantage Index (RCA) :

$$RCA_{ij} = \frac{X_{ij}/X_j}{X_{iw}/X_w} \quad (1)$$

X_{ij} is the commodity export value of industry i in country j, X_j is the total export value of the jth country, X_{iw} is the global export value of the same commodity, and X_w is the total export value of world trade.

The Net Export Revealed Comparative Advantage Index (NERCA):

$$NERCA_{ij} = \frac{X_{ij}}{X_j} - \frac{M_{ij}}{M_j} \quad (2)$$

M_{ij} is the total imports of manufactured goods, and M_j is the country's total trade imports.

(3) Trade Competition Index TC = the import and export volume of a certain product in a country / the total trade volume of a certain commodity in a country.

This paper draws on the above indicators as indicators to measure the international competitiveness of China's manufacturing industry, and uses the principal component analysis method to reduce the dimensions of the above four indicators, which can simplify the complexity.

$$\text{score} = 0.262 \times RCA + 0.267 \times NERCA + 0.247 \times CW + 0.259 \times TC \quad (3)$$

Below we use this indicator as the basis for calculation.

The demographic dividend-related data comes from the 1980-2018 China Statistical Yearbook of Population and Employment. Other data are from the WTO database.

3. The Dynamic Evolution of Demographic Dividend and International Competitiveness of Manufacturing Industry

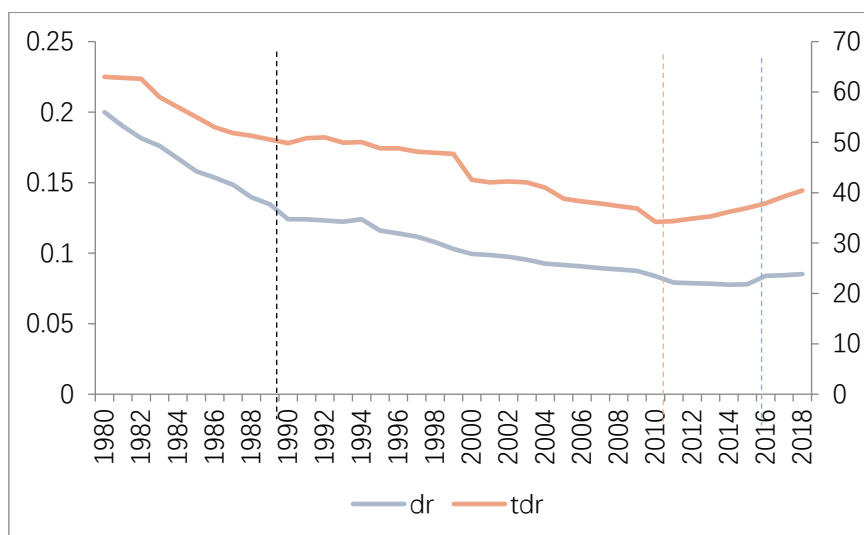


Fig. 1. Trend of China's Demographic Dividend Indicators (1980-2018)

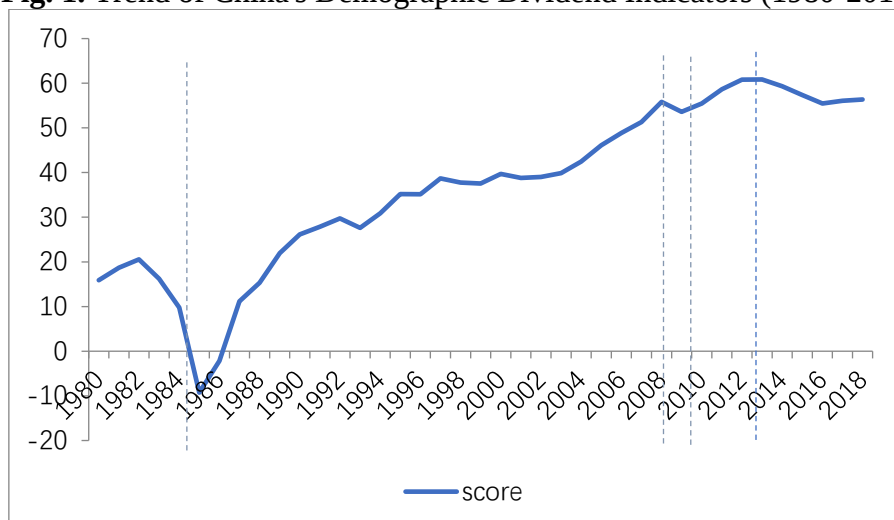


Fig. 2. Trend of Comprehensive Indicators of China's Manufacturing International Competitiveness (1980-2018)

As can be seen from the above figure, there is a strong correlation between changes in demographic dividends and changes in manufacturing development as a whole, and the inflection point is very close. However, there were 2 periods of time when economic development declined due to other reasons, resulting in uncorrelated demographic dividends and manufacturing development.

The first period was from 1980 to 1985, during which the demographic dividend was released, but the international competitiveness of the manufacturing industry was in a stage of rapid decline. The main reason is that during this period, China's prices increased rapidly, the exchange rate was overvalued, and labor productivity was still low, so the international competitiveness of the manufacturing industry declined.

The other period was from 2008 to 2010. During this period, the international competitiveness of the manufacturing industry had a phased decline. In 2010, the international competitiveness of my country's manufacturing industry declined to a small bottom. During this period, the cost of China's manufacturing industry rose and the production cost of manufacturing industry increased. So the profit margins declined, and the global financial crisis also caused global demand for manufacturing products to decline, eventually led to a low point in 2010.

4. Conclusion and Suggestion

Based on the annual time series data of China's ability-dependency ratio and the comprehensive evaluation index of manufacturing international competitiveness from 1980 to 2018, this paper draws the following conclusions.

There is a significant correlation between the demographic dividend and the international competitiveness of the manufacturing industry, which confirms our theoretical hypothesis. In the time interval from 1980 to 2018, the international competitiveness of the manufacturing industry has a significant correlation with the demographic dividend. The dividends released by the demographic dividends have significantly promoted the improvement of the international competitiveness of the manufacturing industry, and the stagnation and recovery of the ability dependency ratio since 2013 has also had a negative impact on the development of the manufacturing industry.

Therefore, it can be seen that the demographic dividend is of great significance to the development of a country, and we must actively promote the release of the demographic dividend.

According to the research of the article, this paper puts forward policy suggestions on extending the demographic dividend.

(1) Policy Suggestions on Improving Labor Quality

In the long run, the training of labor skills has an incomparably important impact on economic growth. Therefore, China should pay attention to the status of labor quality in the demographic dividend, and extend China's demographic dividend window by improving labor quality to promote economic development.

Therefore, on the one hand, China should strengthen its investment in education. With the support of financial resources, a longer period of compulsory education should be introduced to improve the educational level of the workforce. On the other hand, China's education system currently forms a relatively single talent training model. The increase in the number of years of education has a limited effect on the improvement of human capital. A more diversified and personalized talent training model should be formed to form a supporting force for various talent needs of various industries. Therefore, it is not only necessary to increase investment and support in education, but also to innovate the education system and talent training model. China should take the market demand as the education orientation to achieve school-enterprise collaboration and cultivate talents at all levels and types that are more suitable for market demand. In particular, China should speed up the cultivation of high-level innovative talents urgently needed by high-tech industries to promote the transformation and upgrading of the manufacturing industry.

(2) Policy Suggestions on Increasing the Number of Labor Forces

According to the statistics of the United Nations, China's current fertility rate is declining at an unprecedented rate. China's fertility rate dropped from 6 to 1.6 between 1950 and 2015, which is far lower than the world average of 2.45, and also lower than the developed country's level of 1.67. And the rate of decline is faster than that of the United States, Japan and other countries, which puts pressure on labor supply. In order to increase the labor force and extend the demographic dividend, China should formulate more comprehensive policies in terms of raising the fertility rate and extending the retirement age.

First, increasing the number of laborers will increase China's fertility rate. In 2014, the family planning policy was abolished, and the "two-child alone" policy was launched, which has achieved good results in a short period of time. The number of births has increased significantly, reaching 17.86 million in 2016, the highest number of births in the new century. However, the effect of the policy has gradually weakened since then, and the "universal two-child" policy introduced in 2016 has had little effect. This is because the effect of this policy is essentially short-term and cannot solve the fundamental problem of low fertility. There is no sustainable improvement in fertility, and only a short-term shock effect. Therefore, we need to expand the breadth and depth of the policy, not only to relax the policy to encourage fertility.

In terms of childcare time guarantee, the current maternity leave system in China is not flexible. There is only maternity leave, which is divided into basic maternity leave and encouraged maternity leave in some provinces. However, this time is too concentrated and cannot guarantee normal childcare time. At the same time, the paternity leave for men is only less than 30 days, and under various reasons and pressures, the space for paternity leave is generally very small. The consequence of this phenomenon is that women are still discriminated against in the labor market and lack the desire to have children. Therefore, in terms of maternity leave, it is not only necessary to guarantee women's leave, but also, in order to ensure equality in the job market and eliminate gender discrimination, paternity leave for men should be a necessary policy, and should be extended and implemented. This can not only promote equality between men and women in the job market, and reduce the impact on the female labor force participation rate, but also better relieve fertility pressure and increase fertility. From the point of view of childcare service policies, there is an obvious service gap in China. China should improve relevant childcare services and make childcare more popular. To improve childcare services, the government plays a key role, and it is necessary to make policy planning and corresponding regulatory measures to improve the number and quality of institutions. Finally, in terms of reproductive welfare, at present, China's economic pressure on childbirth is relatively high. Parents face great pressure on housing prices, high prices for infant products, and extremely high education costs, which will inhibit part of their willingness to have children. At present, most of the economic subsidies for childbirth in China are one-time, including the following childbirth nutrition subsidies, maternity insurance and living allowances. All these are difficult to alleviate the pressure on the fertility economy in the long run, and the implementation of these subsidies is relatively small and has little effect. Therefore, it is necessary to form a long-term fertility welfare mechanism to reduce the economic burden for the rearing of newborns.

Secondly, it is also a policy trend to increase the number of labor force and prolong the retirement age. With the arrival of aging, the quality of life and medical level are improved, and the average life expectancy is prolonged. The working age of the labor force should also be appropriately extended, which can not only alleviate the pressure of the high dependency ratio brought about by the disappearance of the demographic dividend, but also increase the number of laborers and ease the pressure of decreasing labor supply.

However, for different industries, the stage characteristics of their career development are also different, and the extension of the retirement age should also take into account the actual situation of each labor group. It is necessary to establish a more flexible policy, to give certain policy flexibility to different industries, and to establish a humanized, diversified and flexible age policy. The policy of extending the retirement age should be advanced step by step. Since there is still a lot of pressure from public opinion to extend the retirement age in China, it is necessary to increase publicity on the

necessity of extending the retirement age system, strengthen the social recognition of this policy, and reach a social consensus.

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