

# **Aggregate demand policy and economic growth in China**

Abstract: Since the reform and opening up of China's economy, China has sustained high-speed economic growth for about 40 years, and it has undergone great changes. Since 2014, the Chinese economy has gradually changed from high-speed growth to medium-speed growth (which is called “the New Normal”). This paper uses a Harrodian growth model in dual economies to understand both the long period of rapid Chinese growth and the recent period of the New Normal.

## **1.Introduction**

From 1978 to 2013, China's economy achieved sustained and high-speed growth for 35 years, with an average growth rate of about 9.8%, creating a world-renowned "China miracle". China's economic miracle has attracted the attention and discussion of academic circles domestically and abroad. Some scholars believe that the existence of a large number of surplus labor from rural areas is the key to China's high-speed growth by relying on export-oriented strategy, while others believe that a series of institutional arrangements in the process of transformation and the implementation of aggregate demand policies have led to a socialist road with Chinese characteristics. The author believes that the existence of a large number of surplus labor force, coupled with government intervention, are the key to China's economic growth miracle. Specifically, after 1978, the system of unified purchase and sale of rural agricultural products and the people's commune system were abolished, the household registration system was gradually loosened, and the dependence of rural labor on the market for reproduction was increasing, and the process of labor commercialization was started with the continuous transfer of rural labor to cities and industries. However, the process of labor commercialization is accompanied by semi-proletariat. The characteristics of the commercialization and semi-proletariatization of rural labor force have made great contributions to China's high-speed economic growth. Firstly, the semi-proletariatization of labor force provides a low-cost advantage for capital accumulation. Capital accumulation makes use of the semi-

proletariat of labor force to keep part of the reproduction cost of labor force in the countryside, thus maintaining the low wage of labor force, that is, the wage provided by capital for agricultural labor force is not enough to maintain the reproduction of labor force, and agricultural income is a necessary supplement to maintain the reproduction of rural labor. Secondly, by allowing migrant workers to enter cities, the income level of rural residents in China has been greatly improved, and the income gap with urban residents has also been narrowing. Lots of rural areas have left out of poverty because of this way. In addition, various institutional arrangements are also the key to China's high-speed growth. For example, the competitive local government, "state-owned enterprises - private enterprises - township enterprises" ternary market investment system and the implementation of expansionary demand policies.

Since 2014, China's economic growth has slowed down, gradually stabilizing at 6.5% to 7%, and China's economy has entered a new normal. Chinese economy has new features and changes, especially on demand and supply side. On demand side, investment demand and consume demand are weak, which lead to the lack of aggregate demand and high unemployment. On supply side, there is an increasing trend in factor cost, especially in wage rate of labor force. The conditions that constrain economic growth have changed both on the supply side and on the demand side, the previous aggregate demand policies have prevented China from maintaining a high-speed growth path.

This paper uses a Harrodian growth model in dual economies to understand both the long period of rapid Chinese growth and the recent period of the New Normal.

## 2. A Harrodian growth model in dual economies

Following Lewis (1954) and Skott (2020), we make a distinction between 'dual' and 'mature' economies. In dual economies, labor supply is perfectly elastic, the modern sector in dual economies is constrained by a combination of low stocks of private fixed capital, inadequate public infrastructure and short-ages of human capital and labor supply does not constrain economic growth. In mature economics, the capital stock is large relative to the labor supply, and long-run economic growth is constrained by the growth rate of the labor supply.

## 2.1 Good market equilibrium and the warranted growth rate

Consider a closed, one-sector economy with two inputs, labor and capital. We assume a Leontief production function

$$Y = \min\{\sigma K, \lambda L\} \quad (1)$$

Where  $Y$ ,  $K$  and  $L$  denote output and the inputs of capital and labor, respectively. The parameters  $\sigma$  and  $\lambda$  denote the capital and labor productivity.

In the Harrodian framework, the rate of capacity utilization is not an adjustable variable in the long run, it will reach to a desired rate  $u^d$ . A standard Harrodian investment function relates the change in the rate of accumulation to the difference between the actual rate of capacity utilization and the desired rate, that is,

$$\dot{g} = \frac{d}{dt} \widehat{K} = \lambda(u - u^d) \quad (2)$$

Where  $\dot{g}$  and  $\widehat{K}$  denote the growth rate and the rate of accumulation.

As for saving function, we assume that workers spent all wage income and firms/capitalists save a fraction  $s$  of gross profit. The saving function can then be written as,

$$s = \frac{S}{K} = \frac{s\Pi}{K} = s \frac{\Pi}{Y} \cdot \frac{Y}{Y^*} \cdot \frac{Y^*}{K} = s\pi u\sigma \quad (3)$$

Where  $s$ ,  $\Pi$ ,  $\pi$  denote total saving, gross profit and profit share, respectively.

Investment function can be written as,

$$I = \frac{I}{K} = \frac{\widehat{K} + \delta K}{K} = \widehat{K} + \delta \quad (4)$$

Where  $I$  and  $\delta$  are gross investment and the rate of depreciation.

Good market equilibrium condition requires that total saving must equal to total investment, that is,

$$S = I \rightarrow u = \frac{\widehat{K} + \delta}{s\pi\sigma} \quad (5)$$

$\sigma = \frac{\widehat{K} + \delta}{s\pi u}$  is the short-run equilibrium value of capacity utilization rate.

In the long run, and the dynamics of the system can be written as,

$$\frac{d}{dt} \widehat{K} = \lambda \left( \frac{\widehat{K} + \delta}{s\pi\sigma} - u^d \right) \quad (6)$$

Equation (6) has a station solution given by

$$\widehat{K}^* = s\pi u^d \sigma - \delta = g_w \quad (7)$$

Where  $g_w$  is the warranted growth rate.

## 2.2 The growth function in dual economies

In dual economies, the labor market conditions do not change endogenously as result of firms' output and investment function while the demand signal from product market has significant effect on firms' output and investment function. We think that prices are fully flexible, the changes in demand are adjusted by the changes in prices: a rise in demand leads to an increase in the price. Wage contracts are cast in terms of money wages, and the real wage rate and the share of profits in income therefore respond to unanticipated movements in prices: a positive demand shock generates a rise in the profit share, and firms respond to this rise by increasing the growth rate of output.

The generic growth function can then be written as

$$\hat{Y} = h(\pi), h_{\pi} > 0 \quad (8)$$

Combining the good market equilibrium condition with the growth function, we can get a closure for the model, and the set of steady-growth solutions for  $(\pi, g)$  is characterized by:

$$h(\pi^*) = s\pi^*u^d\sigma - \delta \quad (9)$$

$$g^* = h(\pi^*) \quad (10)$$

Depending on the shape of the growth function, equation (9) and (10) may have no solutions, a unique solution or multiple solutions. The phase diagram is shown below.

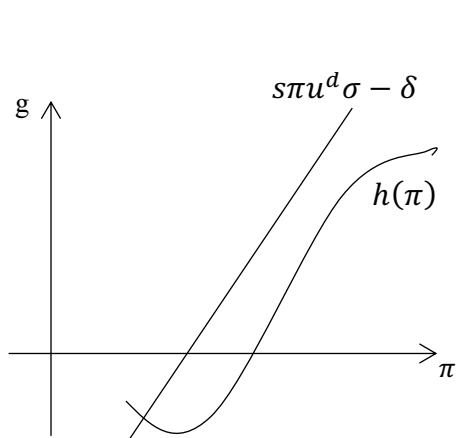


Figure 1a

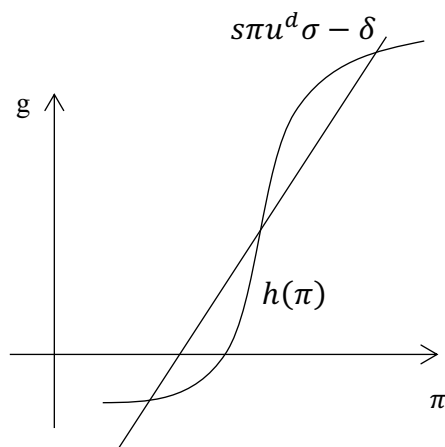


Figure 1b

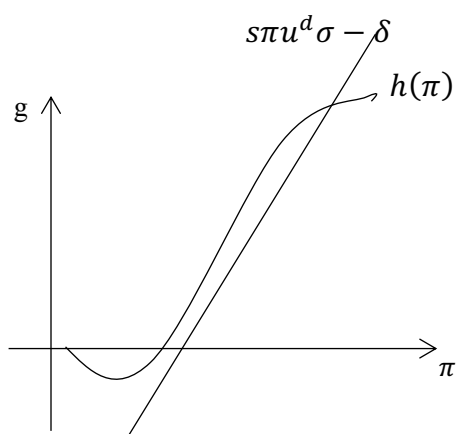


Figure 1c

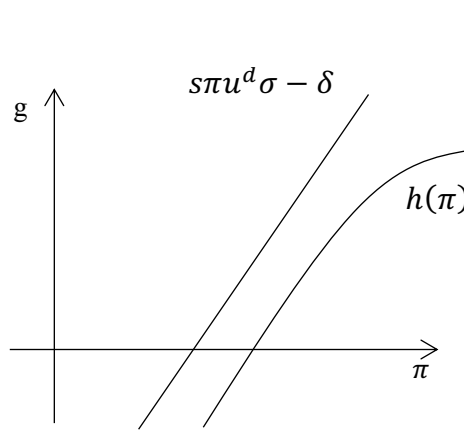


Figure 1d

From the figure 1a to 1d, we can see that the closure can have one solution, three solutions and no solution according to different shapes of h- function. Figure 1b has three solutions, and the two extreme equilibria are the stable solutions and the intermediate equilibrium is unstable. <sup>①</sup>

The analysis of growth in dual economies has several implications. The existence of multiple steady-growth paths, first, implies that countries that initially seem quite similar may follow very different growth trajectories. Second, temporary aggregate demand policy may raise the long-run rate of growth. for instance, the expansionary demand policy can make the IS curve move downward (moving from figure 1b to figure 1c) by reducing the saving rate. Third, shifts in the h- or s-functions or in the desired utilization rate have permanent growth effects.

Rapid Chinese growth can be reflected in the high steady-growth solution in figure 1b. In addition, the comprehensive expansion demand policy implemented since 1998

<sup>①</sup> We can determine whether the solution is stable or not by Jacobine matrix.

has helped the Chinese economy gain a higher growth rate and a higher profit share.

### 3. China' s economic growth miracle: some styled facts

#### 3.1 high-speed growth from 1978 to 2014

Since the reform and opening up in 1978, China has created a miracle of economic growth that has attracted worldwide attention. From 1978 to 2014, China's total GDP has increased from 3678.7 billion yuan in 1978 to 105.7 trillion yuan in 2014 (1978 is the base period), with an average annual growth rate of approximately 9.5%. And per capita GDP has increased from 385 yuan in 1978 to 7748yuan in 2014 (1978 is the base period), with an average annual growth rate of approximately 13.9%. Since 2010, China's GDP has surpassed Japan, becoming the second largest economy in the world after the United States, and its share of world GDP has increased from 2% in 1978 to 13% in 2014.

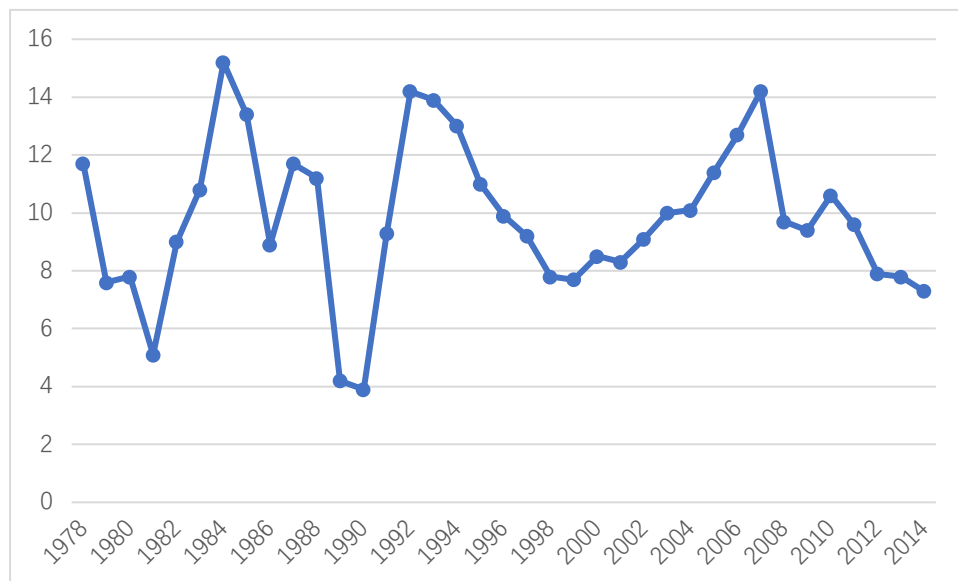


figure 2 China's growth rate of real GDP (1978-2014)

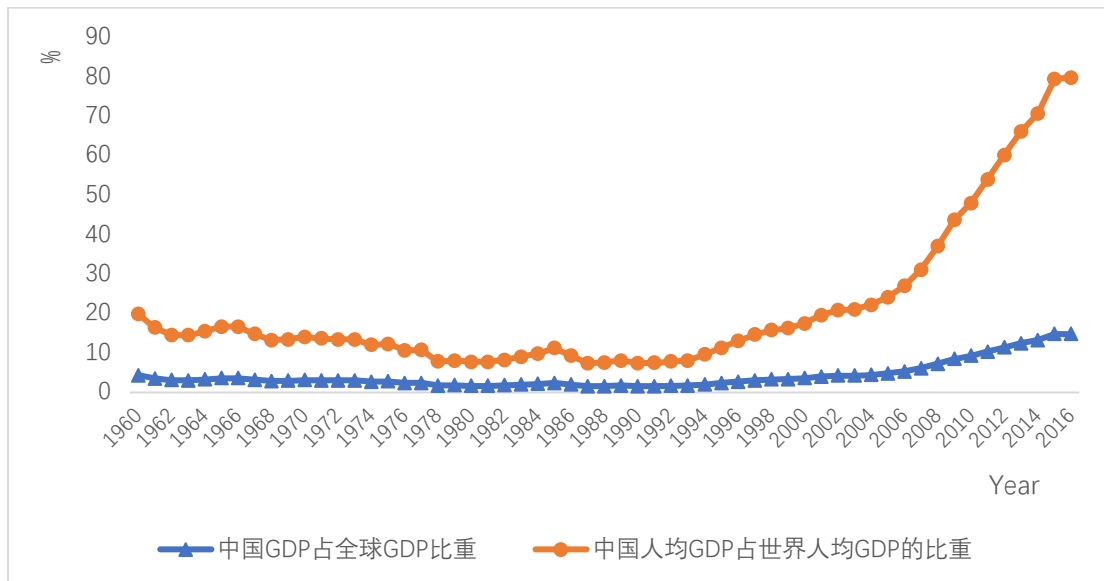


Figure 3 The proportion of China's GDP to the world's GDP, and the proportion of China's GDP per capita to the world's GDP per capita

China's nearly 40 years of high-speed economic growth is by no means accidental, and the academic community has also made many discussions on the reasons for the emergence of the "China Model." The author believes that China can achieve the growth miracle mainly for the following reasons:

**Large amount of surplus labor force in rural area played a crucial role on urbanization and industrialization, and did great contributions to economic growth.** In 1985, the government began to allow peasants to move freely into cities to start work, which started the commodification process of rural labor in China. In addition, due to the effects of the household registration system and the rural land system, although Chinese farmers can work in cities, they still own rural land and part of the labor reproduction process remains in the rural areas. The commodification of rural labor in China has provided a large amount of surplus labor for urban development, and has promoted the process of urbanization and industrialization in China. The characteristics of semi-proletarianization maintained the low wages of rural surplus labor at the same time, thus providing China with capital accumulation Low cost advantage.

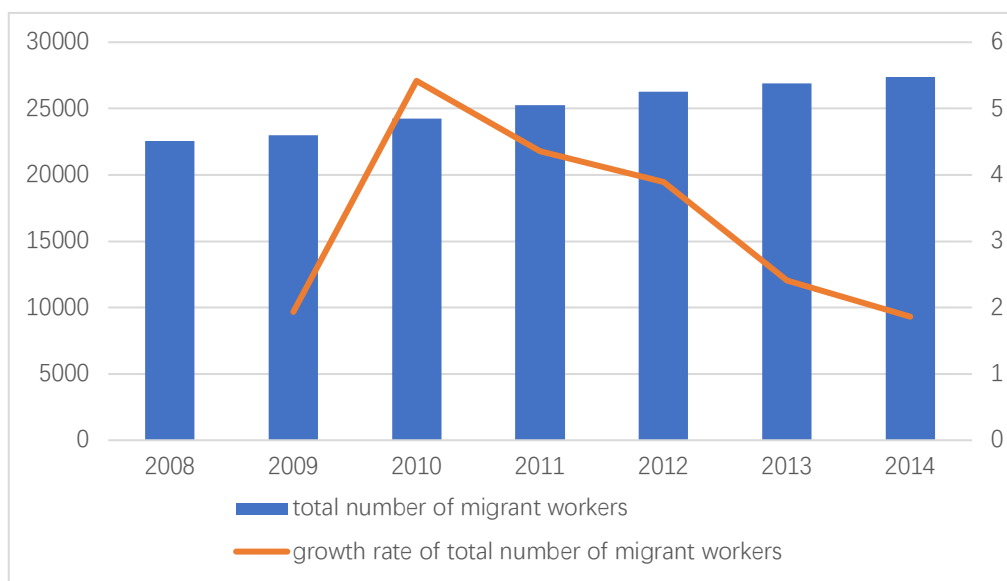


figure 4 Total number of peasant workers and the growth rate of total number of peasant workers (2008-2014)

peasant workers are employed in labor-intensive industries such as manufacturing and construction due to low education level and old age, and the labor contract is imperfect due to household registration, so the nominal wages of peasant workers are much lower than the nominal wages of urban workers. A lower wage rate can lead to a higher profit share in the industries where peasant workers are employed, which can make the h-function to move upward.

Table 1 nominal wages of peasant workers and urban workers

year	nominal wages of peasant workers (yuan)	nominal wages of urban workers (yuan)
2008	16080	28898
2009	17004	32244
2010	20280	36539
2011	24588	41799
2012	27480	46769
2013	31308	51483
2014	34368	56360

**Special institutional system promotes a substantial increase in investment demand.** For more than 30 years of reform and opening up, investment demand has been an important force driving China's rapid economic growth. In 2014, the contribution rate of investment demand to economic growth was 46.9%. From 1978 to 2014, the average annual growth rate of Chinese investment is about 16.2%, exceeding the GDP growth rate. It can be seen from Figure 5 that the period of fluctuations in



China's economic growth rate is highly consistent with the period of fluctuations in the growth rate of total fixed capital formation. When the growth rate of total fixed capital formation increases, the rate of economic growth accelerates; The decline will slow down the economic growth rate, which can be described as an investment-dependent economic growth model.

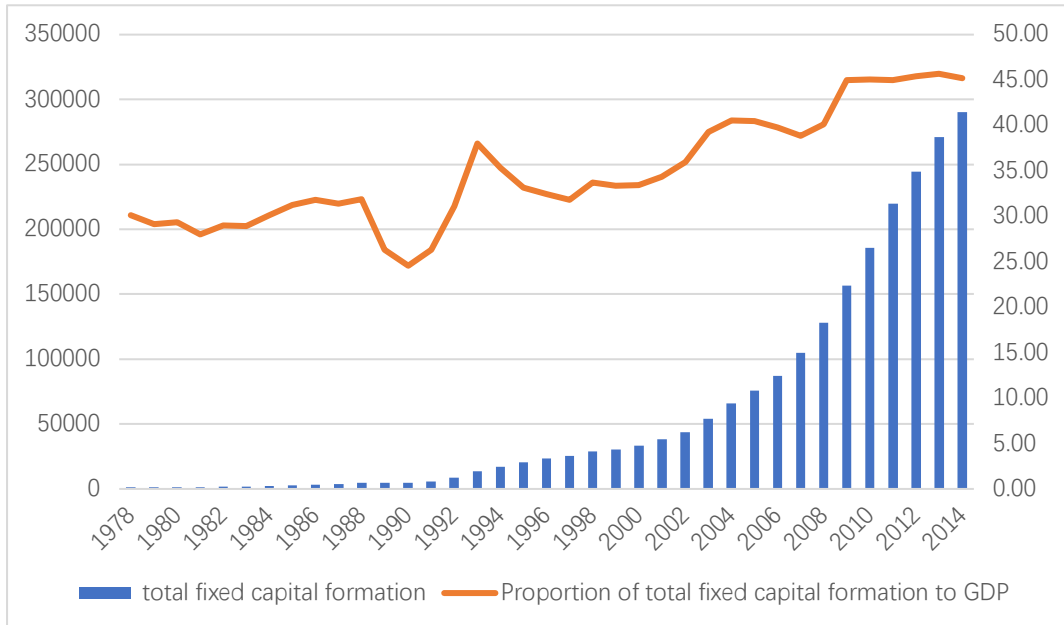


figure 5 total fixed capital formation and proportion of total fixed capital formation to GDP (1978-2014)

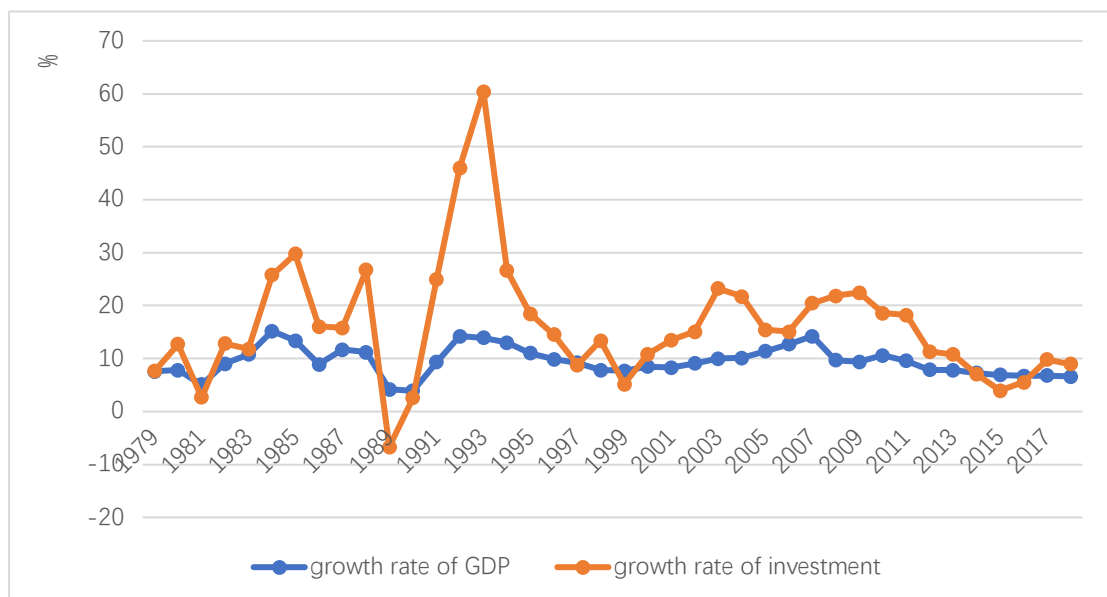


figure 6 growth rate of GDP and growth rate of investment

Of course, China's efficient investment system is dependent on China's unique institution system. First, the central and local governments play an important role in investment. The central government mainly invests in productive facilities as well as urbanization and infrastructure construction to expand investment needs and absorb surplus capital and labor. For example, in response to the 2008 financial crisis, the central government invested billions of dollars in urbanization and infrastructure to expand domestic demand. Local governments continue to attract investment through "land finance" to realize large-scale real estate development investment and promote local economic development. Secondly, the ownership structure of "private enterprises, township enterprises and state-owned enterprises" formed by the reform of state-owned enterprises has promoted large-scale investment growth. In addition, state-owned and collective-owned enterprises can also large-scale investment project, because they have large amount of capital and good financing ability.

**Aggregate demand policies do great contributions to rapid Chinese growth.**

Before 2010, China's economic growth has experienced two stages: the first stage was from 1978 to 1998. China was facing a shortage economy, which was reflected by excess demand and shortage of supply.<sup>①</sup> At this stage, the warranted growth rate had exceeded the achievable growth rate under current capacity utilization, the economy needed to reduce the warranted growth rate. The macro-control policy implemented was austerity, in order to prevent inflation. In 1998-2010, China had faced a lack of aggregate demand. The macro-control policy of "expanding domestic demand" was implemented. This Keynesian macroeconomic policies helped survive the Asian financial crisis. The "active fiscal policy" was mainly about the issuance of government bonds, from 1998 to 2001, a total of 510 billion yuan of government bonds were issued, which were mainly used to invest in infrastructure construction. The "sound monetary policy" was based on the reduction in interest rate. The interest rate on deposits has been lowered seven times in a row over the past few years to promote consumption and investment. Judging from the actual effect of stimulating economic growth, the policy of "expanding domestic demand" is undoubtedly very successful. During the five years from 1998 to 2002, the Chinese economy maintained a high economic growth rate despite weak external demand. The five-year average growth rate reached 8.24%, while the average inflation rate was almost zero. At the end of 2008, the State Council issued

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<sup>①</sup> At this stage, China adopted a ticket system to curb excess demand. The so-called 'ticket system' means that people can buy something only if having the ticket. For example, someone wanted to buy salt, then, you must have salt ticket.

a well-known 4 trillion investment plan to deal with external shocks caused by the financial crisis. Judging from the actual effect of this counter-cyclical policy, it is undoubtedly successful in stimulating economic growth and preventing economic recession.

Expansionary demand policy can not only move the s-function downward by reducing savings, but also move the h- function upward by promoting firms' investment, which can lead to a rise in growth rate and profit share.

## 3.2 The New Normal

Since 2011, China's economic growth has gradually slowed down, and president Xi announced that China has entered a New Normal in 2014. In this new stage, China will enter a period of transition from high-speed economic growth to medium-speed economic growth. We would experience a series of new characteristics and the basic conditions that constrain economic development have undergone tremendous changes. The original expansionary aggregate demand policy has not adapted to the needs of China's economic development.

### **3.2.1 will labor supply constrain economic growth in this stage--- Is China undergoing a transition from a dual economy to a mature economy?**

The unemployment rate may be an important indicator for judging whether a country's economy has turned into a mature economy, but China's unemployment rate is meaningless. In China, official data only counts urban unemployed people, not include rural unemployed people. And because of the collective rural land system, peasant workers can go back to work in agricultural production even if they become unemployment people, this system provides hundreds of millions of peasant workers with a special employment guarantee and exit mechanism. Therefore, China 's ability to withstand unemployment is not as clear as in Europe and the United States, it is more flexible, and there is no way to obtain a standard line to determine whether China has entered a mature economy or not.

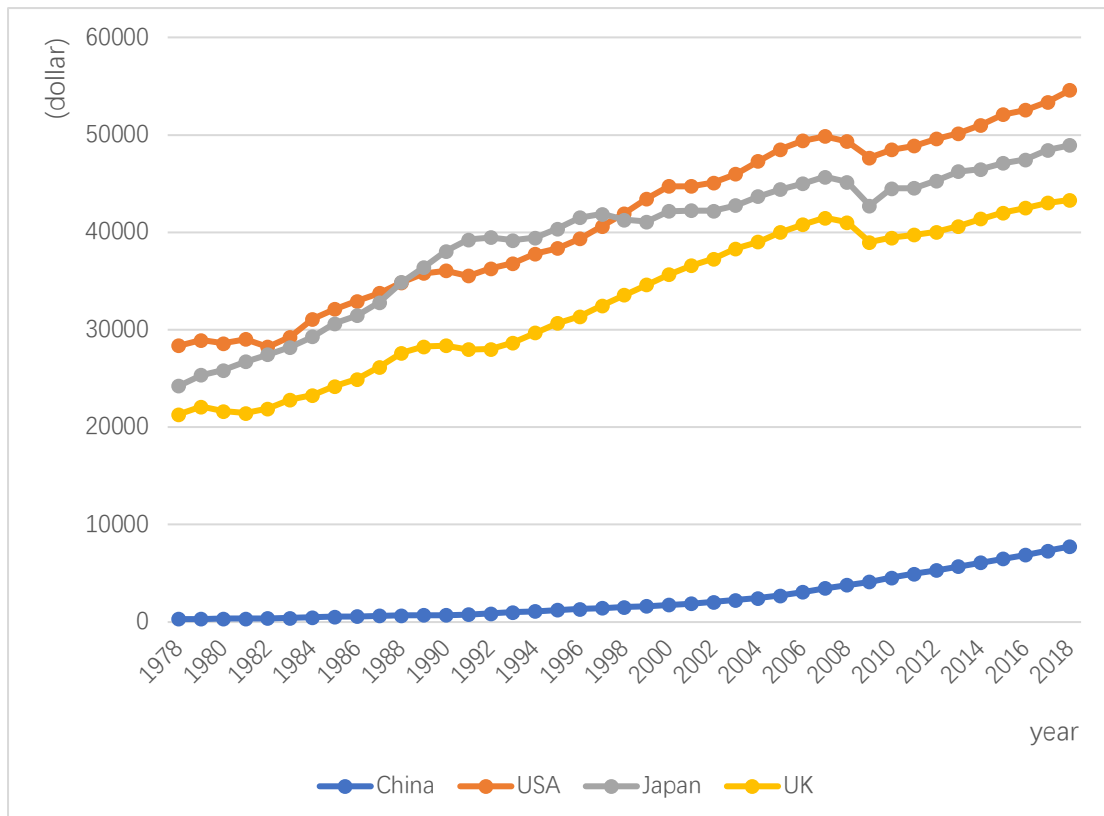


Figure 7 Real per capita GDP in China, USA, Japan and UK (1978-2018)

We can only compare with developed countries to confirm China's current economic pattern. According to figure 7, we can see that China's real per capita GDP is much lower than USA, Japan and UK, which are already mature economies. Therefore, we believe that, at least for now, China is still a dual economy, and the labor market condition has no effect on firms' output and investment decision. However, it should be noted that the reserve army of labor in China is declining, the annual growth rate of the number of peasant workers is declining year by year, and the nominal wages of workers continue to increase. In the future, labor supply restrictions will become an important factor affecting China's economic growth.

### 3.2.2 The changes in demand and supply side

Before entering the New Normal, China's economy has achieved a transition from Figure 1b to Figure 1c by government intervention, and achieved a higher growth rates and greater profit share.

In the stage of New Normal, Chinese economy has new features and changes, especially on demand and supply side. On demand side, investment demand and consume demand are weak, which lead to the lack of aggregate demand and high unemployment. On supply side, there is an increasing trend in factor cost, especially in wage rate of labor force. The conditions that constrain economic growth have changed

both on the supply side and on the demand side, the previous aggregate demand policies have prevented China from maintaining a high-speed growth path.

Because of the increasing trend in wage rate, the h-function is facing the pressure of moving downward. In order to maintain the speed of economic growth, we must implement the demand policy which can reduce savings. However, there are some risks in the implementation of aggregate demand policies. It does not guarantee that growth will definitely increase or maintain at a medium-speed growth. It is likely to cause a substantial decline in growth rate, which will cause economic stagnation.

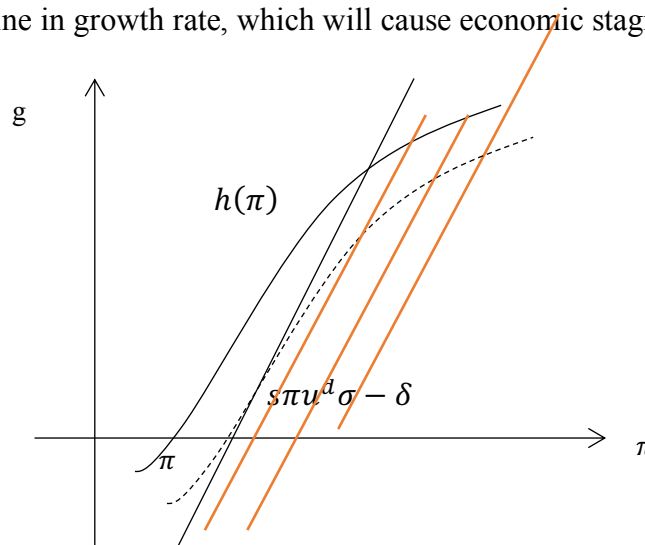


Figure 8 the dynamics in h- and s-function

#### 4.conclusion

Aggregate demand policy is important in economic growth. China's high-speed growth has benefited from the implementation of special institutional system and aggregate demand policies. In the new stage of The New Normal, China is facing new changes in demand and supply, aggregate demand need to be adjusted to ensure a certain rate of economic growth. In this paper, we do not consider many important elements of the Chinese experience, such as the specific monetary and fiscal policy, trade policy. However, the analysis of the specific monetary and fiscal policy, trade policy are very crucial in understanding the relationship between aggregate demand and economic growth.

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