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The Investment Choices to Deal with the Slowdown in Economic Growth—Based on the Analysis of the Effect of Human Capital Investment

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Abstract

Investment is regarded as one of ways to promote economic growth, but the effect of investment on economic growth depends on different investment purposes and investment subjects. This paper begins with a brief description of the economic plight in China in recent years, and then based on human capital theory, reveals the special effect of human capital investment on economic growth compared to physical capital investment. Finally, it puts forward the way to cope with the economic downturn. The purpose of this paper is to provide a theoretical basis for the government policy of increasing investment in human capital to boost economic sustainable development.

Keywords

Economic Growth, Human Capital, Physical Capital, Investment, Overcapacity

1. Economic Plight in China

1.1. Chinese Economic Data

The Chinese economy had been crippled by a financial crisis in 2008, with the growth rate of Gross Domestic Product (GDP) falling to 6.1% in the first quarter of 2009. In the face of economic downturn, Chinese government adopted the "Four Trillion Investment Plan"[1] to stimulate the economy and made GDP gradually pick up (see **Figure 1**). However by 2010, GDP growth experienced a decline again. The annual growth rate of GDP was less than 8% both in the year of 2012 and 2013, falling to 7.4% in 2014. In

[1]On November 5, 2008, Premier Wen chaired an Executive meetings of the State Council and put forward a series of measures to expand domestic demand and promote economic growth. The implementation of these measures required about four trillion RMB by the end of 2010.

2015, the growth rate of the third quarter slipped below 7.0%, and the growth rate of the year was 6.9%. **Figures 2-4** manifest that the monthly retail sales of consumer goods, the cumulative investment in fixed assets and import and export volume of the year of 2015 were all lower than the year of 2014, which means the growth rate of consumption, investment and exports all slowed down. Overall, after deducting price factors, compared to the year of 2014, the annual growth rate of retail sales of consumer goods in 2015 maintained the position of 10.6%; investment in fixed assets decreased by 2.9%; exports volume and imports volume fell by 1.8% and 13.2% respectively [1].

For industry, as shown in **Figure 5**, in 2015 Purchasing Managers' Index (PMI) per month has been in the ups and downs of the 50% line, with the fluctuation by 0.2 percentage points; Producer Price Index (PPI) per month has been negative in the whole year

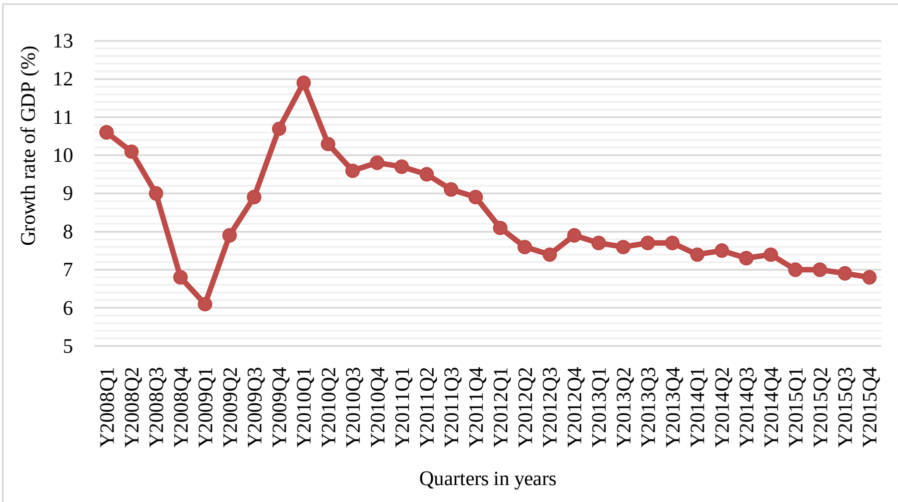

Figure 1. Economic growth in quarters in 2008-2015. (Note: data from national bureau of statistics of the people's republic of China).

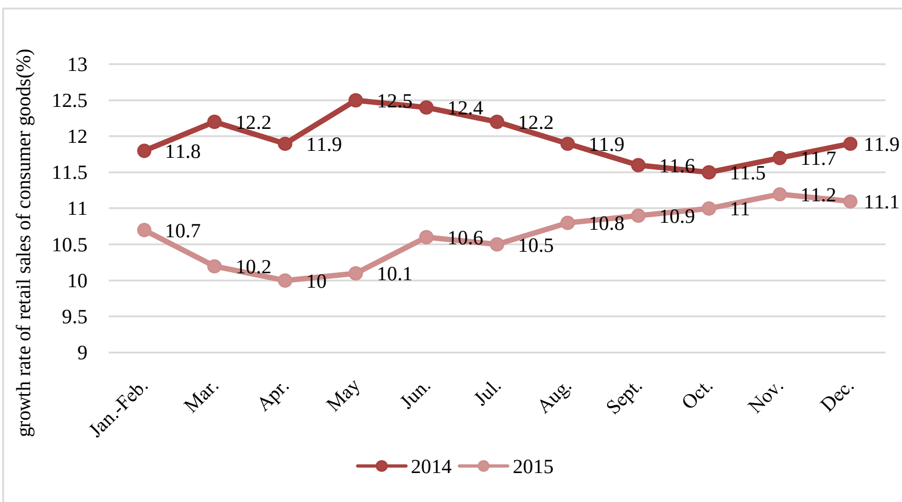

Figure 2. Consumer spending by month in 2014-2015. (Note: data from national bureau of statistics of the people's republic of China).

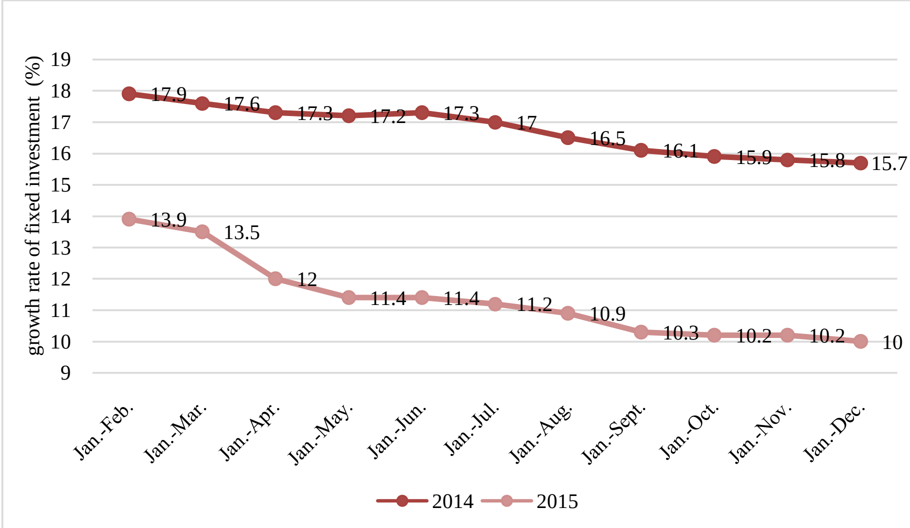

Figure 3. Fixed investment by month in 2014-2015. (Note: data from national bureau of statistics of the people's republic of China).

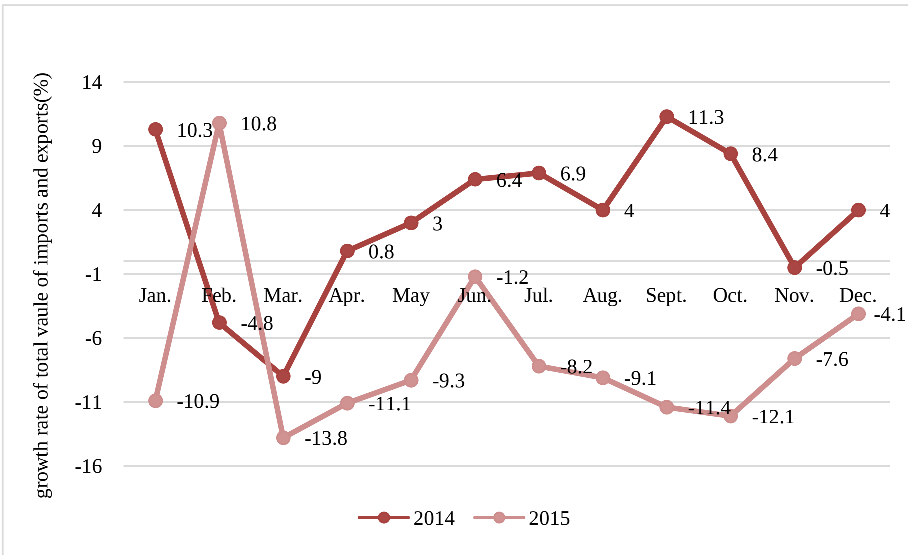

Figure 4. Total value of imports and exports by month in 2014-2015. (Note: data from national bureau of statistics of the people's republic of China).

and plummeted to −5.9% from August to December. Industrial Enterprises above Designated Size realized a total profit of 63,554 billion RMB in 2015, 2.3% less than the year of 2014. Only the profit of private enterprises was increasing, 3.7% more than the year of 2014, while the profit of state controlling enterprises declined by 21.9% [1].

GDP, consumption, investment, export, PMI, PPI and other data all show that China is in a difficult economic situation.

1.2. Behind the Economic Data

What is hiding behind the data? In fact, many scholars have carried out research on this problem over the past few years. The government has taken different measures to cope with economic downturn at different stages. We try to classify these following measures and find the problem.

1.2.1. Overcapacity

In the expansion of investment demand, increasing investment in fixed assets such as infrastructure construction and real estate development, is the approach that government commonly used. Facing the serious setback situation resulted from financial crisis of 2008, the State Council introduced a "Four Trillion Investment Plan" on November 5, 2008, including pump-priming, industrial revitalization, science and technology projects and social security strengthening. As shown in Figure 6, most of the four trillion

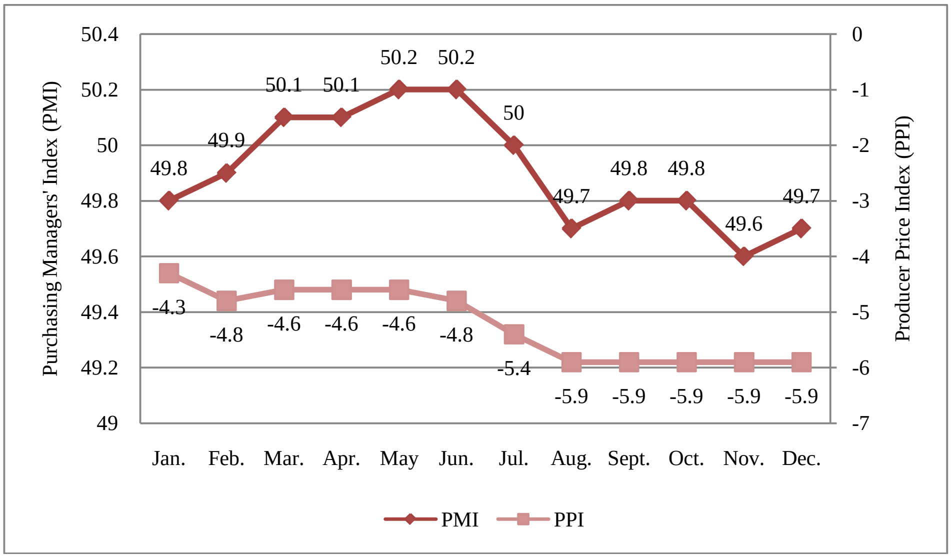

Figure 5. Industrial conditions by month in 2015. (Note: data from national bureau of statistics of the people's republic of China).

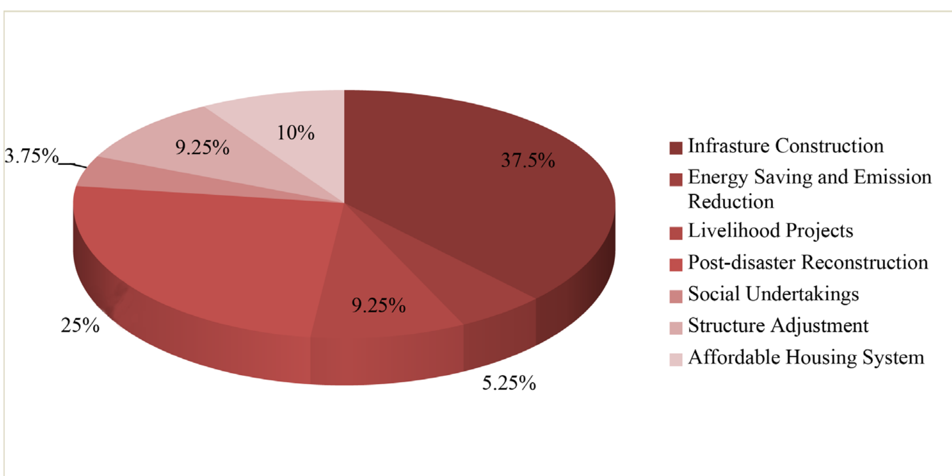

Figure 6. Structure of "four trillion investment plan" in 2008. (Note: data from the website of national development and reform commission of China).

was invested in infrastructure construction and other fixed assets. This plan brought Chinese economy out of the downturn situation soon: the growth rate of GDP rose from 6.1% the lowest point in the first quarter of 2009 to 10.7% in the fourth quarter of 2009; both PPI index and export growth rates turned to positive from November 2009. However, it caused overcapacity. The data from the State Council on September 29, 2009 showed that the excess capacity had appeared in more than 20 industries [2], and by the year of 2013 overcapacity spread to all walks of life. Steel, cement, coal, ship and photovoltaic industry faced extremely serious identical products and sluggish exports. Taking steel industry as an example, at the end of 2012, the excess production of steel was over 2 billion tons and the rate of production capacity utilization was only 72% [3], the lowest level since 2000.

In order to solve the overcapacity and minimize its impact on economic growth at the same time, the government suggested an idea "The Belt and Road"[2] and made it as a new drive for economic growth in September 2013. In the first half of 2015, the total volume of import and export between China and countries along the Belt and Road was nearly 3 trillion RMB, accounting for 25% of China's foreign trade gross at the same period [4]. "The Belt and Road" is essentially a combination of investment and exports. By encouraging foreign investment, with capital output driving capacity output, excess capacity can be transferred to foreign country. The railway, port construction in these country can resolve China's overcapacity of steel and ship industry. But the problem is that whether the expected return of foreign investment can be achieved.

1.2.2. Insufficiency of Effective Demand

There were two reasons responsible for insufficiency of effective demand. Firstly, considering the future expectations, more than 60% of the people, cannot or dare not consume. Because of the shrinking consumption demand in 2008, the government introduced a series of policies to spur the consumption demand: expand the scale of fiscal subsidies and perfect social security system, put forward tax policy related to consumption, and improve the consumption environment. To be specific, the measures included increasing the resident's minimum living guarantee standard and pension to improve personal income, implementing the policy of "Home Appliances Going to the Countryside" and "trade ins" to reduce the product price, etc. These measures made contribution of consumption toward economic growth reached 56.8% in 2009, far more than 45% in 2008. But it stumbled badly afterwards: such index in 2013 and 2014 dropped to 48.2% and 51.6%[3]. From structure of "Four-Trillion Investment Plan" (**Figure 6**), the proportion of government expenditure on medical, education and social security was 3.75%. Although it had boosted consumption demand to some extent, it didn't fundamentally change people's purchasing power due to the low expenditure of government.

Secondly, people who have purchasing power transferred their consumption demand from domestic to overseas. The data from State Administration of Exchange Control

[2]The Silk Road Economic Belt and the 21st-Century Maritime Silk Road, or simply The Belt and Road, is a historical symbol of the ancient Silk Road in China. In 2013, President Xi put forward this initiative and desired to develop partnership and promote economic cooperation with neighboring countries.
[3]Data reduction from National Bureau of Statistics of the People's Republic of China.

displayed that Chinese tourists' overseas spending reached $1648 billion in 2014, increasing by 28% compared to 2013 [5]. The reason why people are willing to consume overseas is to seek products with low prices and high quality.

1.2.3. Blocked Export

In the aspect of expanding exports, Chinese government instituted some foreign trade policy to reduce the cost of customs and clearance, and measures such as cooperating with equipment manufacturers, promoting the development of cross-border E-commerce. But because of the slowdown in external demand, China's labor cost advantage in decline and export cost in increase, China's export trade volume decreased year by year, which directly caused the economy downturn. In addition, if the international crude oil prices still hovers in the low level in the future and domestic price cannot match, the competitiveness of export enterprises will be affected and foreign trade volume will be further declined.

1.3. Supply-Side Reform

In face of the financial crisis of 2008 and the subsequent economic downturn, the way government stimulated economy was increasing fixed investment. Actually it was a part of Keynesian practices, with an emphasis on demand side management. Although it got certain success, it left a series of problems: overcapacity, structure distorted, environmental pollution and so on. Not giving up fixed investment, the government put forward supply-side structural reforms in November 2015, which means to emphasize four elements in supply side: labor, land, capital, innovation, and focus on resolving the excess capacity, reducing business costs, decreasing inventory in real estate and guarding against financial risks. Specific practices are as follows: improve the quality of products and expand the effective supply to adapt to changes in demand; relax the existing Family Planning Policy and pay attention to education so as to enhance the demographic dividend and human capital investment; build incentive mechanism and create a relaxed environment to guarantee enterprise innovation activities.

But to ensure that these measures can achieve the desired effect and that the labor, land, capital, innovation and other factors can play an active role in the market, an important premise is that enterprises and individuals have sufficient funds. However, the current situation was that industrial added value decreased, the growth rate of broad money (M2) increased. To be specific, the added value of Industrial Enterprises above the Designated Size increased by 6.1% throughout 2015; the growth rate of broad money balance was 13.3% at the end of 2015 [1]. However in 2014, the two index was 8.3% and 12.2% [6]. For enterprises, it means the reduced cash flow in the production process, higher cost of production and the declined profit on sales. If the enterprises don't have enough funds to support operations, it will become more difficult for them to improve product quality and develop R & D activities. For an individual, it means worker's income growth in decline, the money continuously diluted. When individuals lack funds in hands and disposable income cannot catch consumption, neither will individuals have sufficient purchasing power to consume, nor will they have the ability to upgrade consumption and invest in human capital.

In the demand side, the government pays too much attention to the fixed investment, especially investment in infrastructure and real estate, which leads to unsustainable economic growth. In the supply side, the government faces the shortage supply of labor, innovation and effective demand. How to make the development of economy sustainable? The Central Economic Working Conference held in Beijing in December 2014 made it clear that economic growth will rely more on the quality of human capital and technological progress. "China's 13th Five Year Plan" also showed that government will emphasize on human development and comprehensively improve the education, medical and health level. This suggests that government has introduced human capital investment into a new round of investment. So, what is fixed investment? What is human capital investment? What's the role of these two investment in economic growth? These questions will be discussed from the perspective of the human capital investment theory as follows.

2. Investment Effect Analysis

Capital has two categories: physical capital and human capital. Physical capital are plants, equipment, raw materials and other forms of production goods; human capital is knowledge, skills and health embodied in the human body, through the investment (including education, training, health care, and migration) [7]. Human capital is a form of capital relative to physical capital. It has close relationship with the physical capital, but also has its own uniqueness. The reason why knowledge, skills and health embodied in people can be regarded as a kind of capital, is that it has the same basic characteristics as physical capital. For example, they are both the result of investment, indispensable factors of production process, with the characteristic of scarcity, a way to seek economic benefits. However, human capital has some characteristics different from physical capital: physical capital depends on the physical products while human capital is dependent on the human body; the formation of human capital and its efficiency is affected by personal preference.

Both human capital investment and physical capital investment are the power to boost economic growth, but the effect of them on economic growth differs.

2.1. Analysis of Physical Capital Investment Effect

In the whole process of physical capital investment, investment in fixed assets occupies a dominant position. Therefore, physical capital investment is commonly referred to fixed investment. According to investment multiplier theory, fixed investment, with the function of multistage transmission, can double and redouble GDP increase: it will generate the need for raw materials, production equipment, labor demand, and then an increase in related industry output and consumption demand follows.

Fixed investment generates need for production in the investment process and will increase production capacity at the end of the investment, thus having both demand and supply effects on economic growth. Demand effect is created as investment process begins. With the start of the investment activities, required inputs are needed to buy, leading to a large demand of production goods and development of related industries, thereby stimulating the economic growth. Supply effect is created when the investment ends. As fixed assets are delivered to use or put into production, the supply of production goods and end-product will increase.

Therefore, physical capital will increase the demand of production at the beginning of investment, and improve capacity at the end of the investment. But if the increased production capacity cannot be digested, overcapacity will appear, especially in case of excessive investment. Excessive investment has created excess demand before the production is completed, which will accelerate inflation. After completion, the sudden increase in production capacity, due to multistage transmission, will lead to overcapacity in the whole and related industry. On the one hand, overcapacity will decrease return on investment of enterprise. To solve the problem, the factories need to amalgamate or close, which will result in unemployment, then the reduction in household income and consumption expectations. On the other hand, large enterprises with overcapacity rely on credit to survive, however, emerging, small or medium sized enterprises get stuck due to difficulties in financing. This mismatch leads to weak innovation in real economy and difficulty in upgrading industrial structure. So economy will be under more and more serious downward pressure.

2.2. Analysis of Human Capital Investment Effect

In the 1980s, Lucas (1988) introduced the human capital theory into Theory of Neo-Economic Growth, emphasizing that continuing to invest in human capital can improve a country's long-term growth rate sustainably [8]. Human capital investment is the same as other forms of investment, which includes costs and benefits. Human capital is an economic engine for backward country to take off [9]. Schultz (1961) suggested that the contribution of human knowledge, skills, health and other human capital to economic growth, was far more than physical capital and labor quantity to economic growth [7]. Heckman (2004) found that in China, the potential return on investment of human capital was higher than that of physical capital, but China has great political distortions, which cannot achieve the potential return on investment. He also put forward that human capital and physical capital investment should have appropriate proportion [10]. Sun and Dong (2007), through the empirical analysis, pointed out that in China, besides maintaining the physical capital accumulation, human capital investment should also be increased, thereby to promote sustainable and stable economic development [11]. Wang (2011) analyzed economic data of the year of 1978 to 2009 in China to show that physical capital, human capital and GDP existed a long-term co-integration relationship: in short-term economic growth depended on physical capital investment, the contribution of human capital to economic growth was relatively small; but in long-term, the contribution of human capital had significant and persistent effect [12].

Human capital investment is achieved through education, training, health care and the migration. In the process of human capital investment (the production of human capital), it will generate two aspects of demand: one is the demand for material products and services, such as school and hospital buildings, teaching facilities and medical equipment and other products; the other is the demand for human capital, such as teachers, doctors and the related material production personnel. Not only do these demand promote the development of education, health industries, but also enable the development of construction, high-tech and other related industries, thereby boosting the economic growth. In addition, the products and services required for human capital investment exist in the form of end-product, which has a larger income elasticity and price elasticity. Continuing demand for this kind of products and services will trigger physical capital investment in return.

Different from that there is only supply effect when physical capital investment ends, there exists both supply and demand effect when human capital investment ends. The results of human capital investment will lead to a higher level of human capital supply, including mastering more knowledge and skill, having better physical health, so that the marginal productivity of labor can be improved; social production possibility frontier under established resources can move as far as possible; more product and service with high-quality can be provided. This is the supply effect of the human capital. The demand effect of human capital investment has two aspects: Firstly, the improvement of the human capital stock increases personal income; the increase of personal income lead to the growth of consumer demand and the expansion of the consumer market, which brings more opportunities and stronger stimulation of investment. Secondly, as higher human capital stock requires higher physical capital to match, more advanced physical capital will be invested. It is such a recycle that demand and supply effect of human capital investment promotes the sustainable economic growth. Figure 7 compares the different effect of physical capital investment and human capital investment on economic growth.

3. Conclusions

3.1. Policy Proposal for Government

The problem of overcapacity since 2008 highlights the tough policy issues: if we don't suppress the impulse of fixed investment, the problem of excess capacity will not be solved and will become more serious. Moreover, it may trigger a chain reaction, which eventually leads to decline in economic growth. If we compress the capacity, the economy will encounter downturn immediately.

In the face of such a dilemma, this paper compares the different effects of human capital and material capital investment on economic growth, and comes to a conclusion that the government cannot only apply fixed investment policy to boost economy, and should increase human capital investment as well. Fixed investment has stimulated Chinese economy to develop rapidly for decades, and human capital investment will provide Chinese economy with sustainable growth. To this end, the government can make adjustments in the following aspects.

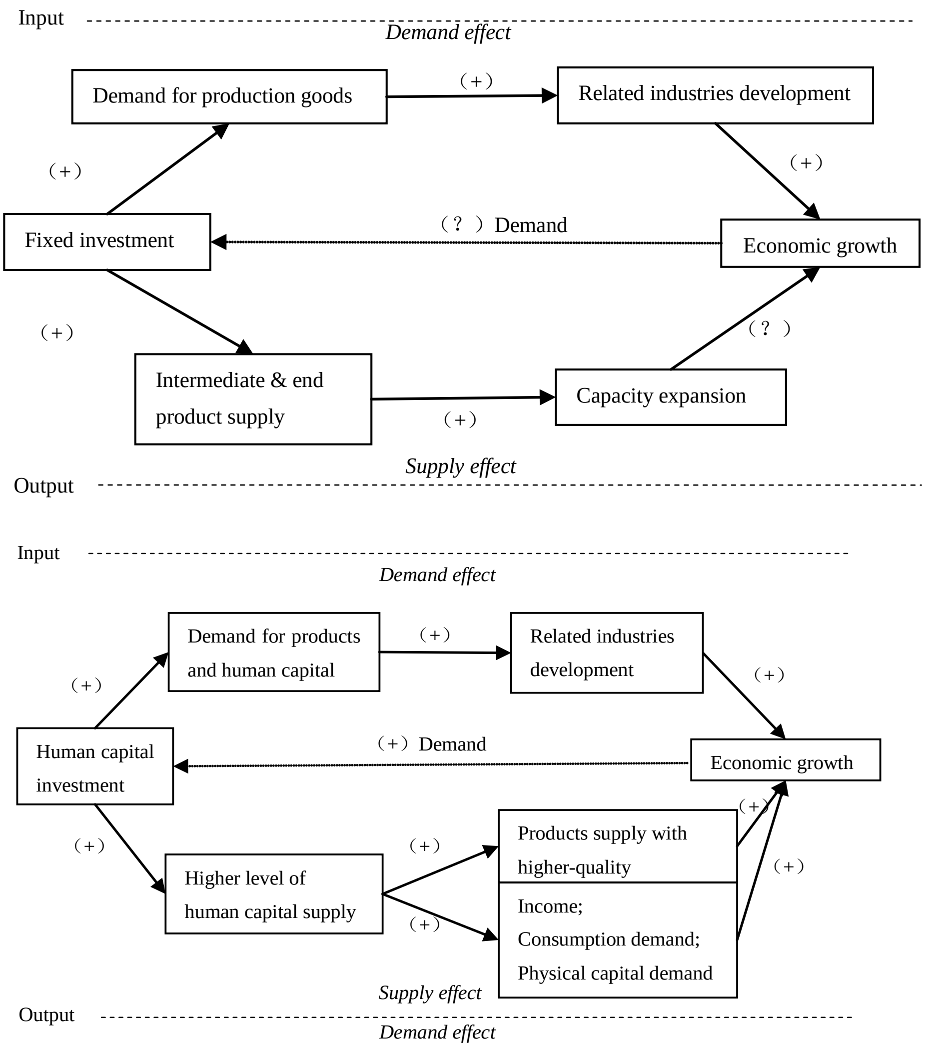

Figure 7. Different effects of physical capital and human capital investment on economic growth.

3.1.1. Increase Public Investment in Human Capital

In education, health, social security and other public human capital investment areas, the expenditure level of Chinese government is far less than other countries. In education, China's education investment did not account for 4.4% of GDP until 2012. It was the first time for China to reach the international standard level of 4%. However, in 2001, for United States, Japan and other high-income countries, their public education expenditure had already accounted for 4.8% of GDP. Moreover, for Colombia, Cuba and other low-income countries, the figure was 5.6% [13]. In terms of medical treatment, according to the International Statistical Yearbook in 2013, the data showed that government's health expenditure in China occupied 5.15% of GDP, not only lower than the world average level (10.60%), but also lower than the average level of low-income countries (5.28%) [14]. China's public social security level was relatively low, too. Taking the pension fund for instance, Report on the Development of China's Pension in 2012 released that China's pension fund reserves only made up 2% of GDP, while the figure was 15% in United States, 25% in Japan, the highest 83% in Norway [15]. Therefore, Chinese government should increase public human capital investment in those key areas.

3.1.2. Play the Role of Policy Guidance

Apart from improving public human capital investment level, government should guide and encourage other subjects of human capital investment (family and individual) to increase investment in human capital. Firstly, government can actively develop diverse investment subjects. As an example, in education, government can introduce social groups and enterprises by the form of joint ventures, cooperation and others, making them become the part of today's education subject; promote the cooperation between colleges and enterprises; encourage industry associations and enterprises to deliver vocational education and training. In Medicare, the government can encourage social capital to establish medical service institutions, in order to ease such problems as shortage supply of current medical service, unreasonable public health system, low efficiency of resource allocation and nervous doctor-patient relationship.

Besides, government needs to reform the distribution system to ensure that enterprises, individual families have sufficient funds for human capital investment. 1) Setting up a sound social security system. A good social security system can not only decrease personal expenditure when individuals encounter disease, accident, and become old, but also put the family and individual under life and job security. Therefore, family and individuals dare to consume and invest in human capital for peace of mind. 2) Decreasing tax to alleviate the burden on businesses and individuals. With the decrease in individual income tax and increase in disposable income, individuals are willing to use surplus funds for human capital investment, such as acquiring more knowledge and improving health level, after they meet the basic needs. Personal consumption in education, health will spur economic growth. With lower corporate taxes and fees, the operation cost of the enterprise will be reduced, and profits retained within the enterprise will be increased. Such profit can be used in human capital investment as well as the improvement of supply quality, innovation and R & D activities to create more corporate value.

3.2. Achievements

Firstly, we use such data as GDP, consumption, investment, export, PMI, PPI to describe the current economic situation in China and then explain the reasons for the economic downturn from three aspects: consumption, investment and export. Secondly, we compare the different effects of physical capital investment and human capital investment on economic growth and reveal the special effect of human capital investment on promoting sustainable economic growth. Finally, we put forward some proposals of investment in human capital for the government. The contribution of this paper lies in:

The Chinese government usually took the policy of increasing fixed investment to stimulate economy. Since the economic declined again from 2010 and many tough economic issues appeared, we try to analyze these issues and find the way to deal with them. Based on human capital investment theory, we believe that the effect of investment on economic growth depends on different investment purposes and investment subjects and that human capital investment can boost sustainable economy growth. The good news is that the government has realized the importance of human capital investment on economic growth. The content of Central Economic Working Conference held in December 2014 and "China's 13th Five Year Plan" suggests that government has introduced human capital investment into a new round of investment. The purpose of this paper is to provide a theoretical basis for the government policy of increasing investment in human capital.

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