

# Analysis of the Key Factors to the Economic Growth in South Korea

Geyang Xia

*Economics, CUC, Beijing, 100024, China*  
*Corresponding E-mail: angela@cas-harbour.org*

## ABSTRACT

Before 1960s, Korea was a small agricultural country depending on imports. During this 45 years, South Korea has made a huge leap in the economy. The reasons of economic growth of South Korea were analyzed in this paper. The author mainly focused on the science-and-technology-innovation policy, education policy and social income distribution policy and used the formulas that related to GDP as well as supply and demand in macroeconomics to verify the validity of the analysis result. In conclusion, these policies played an important role in the process of the economic development. Moreover, these policies have a profound influence in the society and industries. Even today they still promote the economy and make South Korea stand among the developed countries.

**Keywords:** *manufacturing, education, social distribution, predictive, policy*

## 1. INTRODUCTION

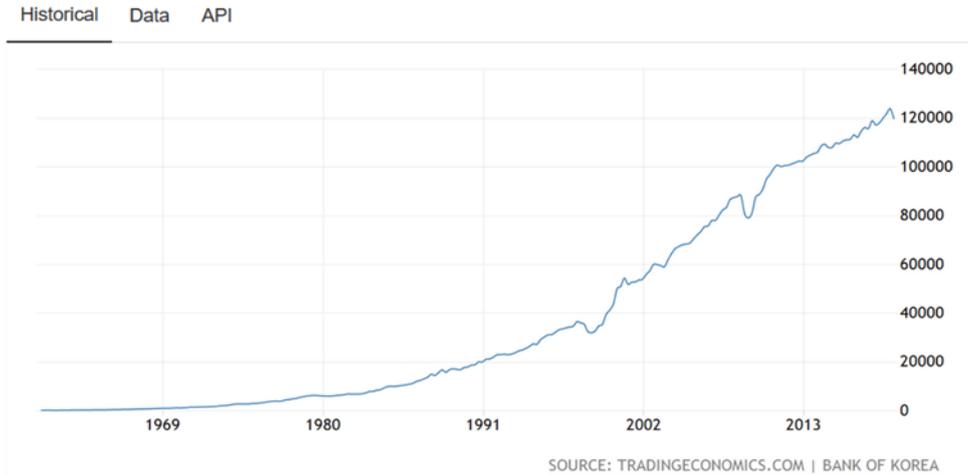
Korea has become a developed country from 2005, it is the third developed country in Asia after Japan and Singapore. It is a miracle that South Korea took only 35 years to achieve this goal. Before 1960s, Korea was a small agricultural country depending on imports. During this 45 years, South Korea has made a huge leap in the economy. In this article, the author investigates the science-and-technology-innovation policy, education policy and social income distribution policy and tries to find out the reasons for its huge leap in the economy of South Korea. Besides, with help of the economic formulas the relationship between these policies and the economic growth is verified.

## 2. ANALYSIS

### 2.1. Development of Manufacturing industries

In 1660s, the Second World War has just ended. After the war in South Korea, the economy was almost completely

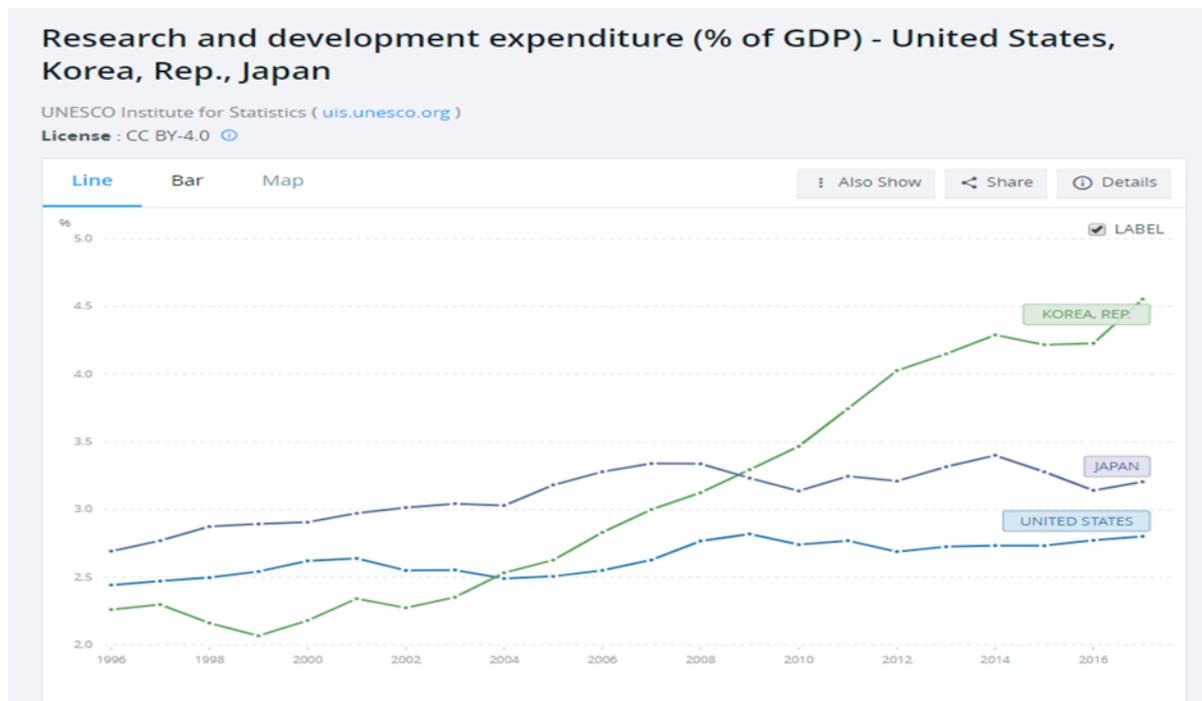
destroyed. In consideration of the scarce agricultural resources and the lack of arable land, the South Korean government decided to promote the industrialization, urbanization and agricultural modernization, with the method of transforming the economic type from import-oriented into export-oriented. With the development of manufacturing, the labour-intensive industries in South Korea gradually turned into technology-intensive industries, like the electronic computer industry, robotics industry, aerospace industry, biotechnology industry et. al. These industries use less capital, have a lower level of technology and more labor. In the mid-1970s to the 1980s there was a transformation from light industries to heavy industries. From 1967 to 1986, the economic and industrial structure of South Korea has undergone fundamental changes during this period. The share of industrial and mining in the gross national product increased from 23% to 33%, while the proportion of agriculture, forestry and fishery in the gross national product fell from 29% to 24%. By 1981, Korea's heavy industry had surpassed light industry and dominated the industry, thus completing the basic tasks of industrialization[5]. From the mid-1980s to present, the industrial structure has been readjusted again to develop knowledge-intensive industries such as electronic computers and super integrated circuit semiconductors.



**Figure 1** GDP From Manufacturing

Fig.1 shows the growth rate in manufacturing. Although there is a decline on this growth process from 2007 to 2009, it is overall a rapid growth in manufacturing industries. After the 1980s, the government of South Korea attached importance to the scientific and technological development, thus increasing the added value of products for the reason that labor and capital-intensive industries rely on the introduction of science and technology. After that, South Korea gradually expanded its international market and had its own products, such as Samsung. The expansion of the brand and the support of the government enabled the South

Korean manufacturing industry to develop at a rapid rate. Meanwhile, South Korean government invested lots of capital into researches and development. In 1993, South Korea spent 9.9 billion dollars on R&D, which took up 2.12 percent of GDP, exceeding developed countries with an average ratio of 2 percent. In 2007, its R&D expenditure reached 35.9 billion US dollars, accounting for more than 3% of GDP. The R&D expenditure exceeded the input level of developed countries such as the United States and Japan. This can be seen in fig.2.



**Figure 2** Research and development expenditure(% of GDP)

The other reason for the rapid growth of the expenditure on R&D in South Korea is the domination of the private sector. In the 1990s, the investment of private sectors into R&D had

a substantial increase and there was a significant increase in the number of private research institutions as well. In 2000, the number of research institutions soared to 7,100.

Meanwhile, the investment of private sectors into R&D accounted for 70% to 80% of all R&D investment in South Korea. Due to the South Korean government's strong investment in R&D, many South Korean companies chose to enter the R&D market[2]. They developed new technology at home and created and sold high-tech products to the foreign markets. The technological gap between

South Korea and Japan narrowed from 1/10 in 2001 to 1/3 in 2010. This can be seen in fig. 3. The progress on the number of patent applications gave Korea company the more efficiency working process. Advances in technology not only enhanced the working efficiency of the workers, but also improved the ability of value creation of the enterprises.

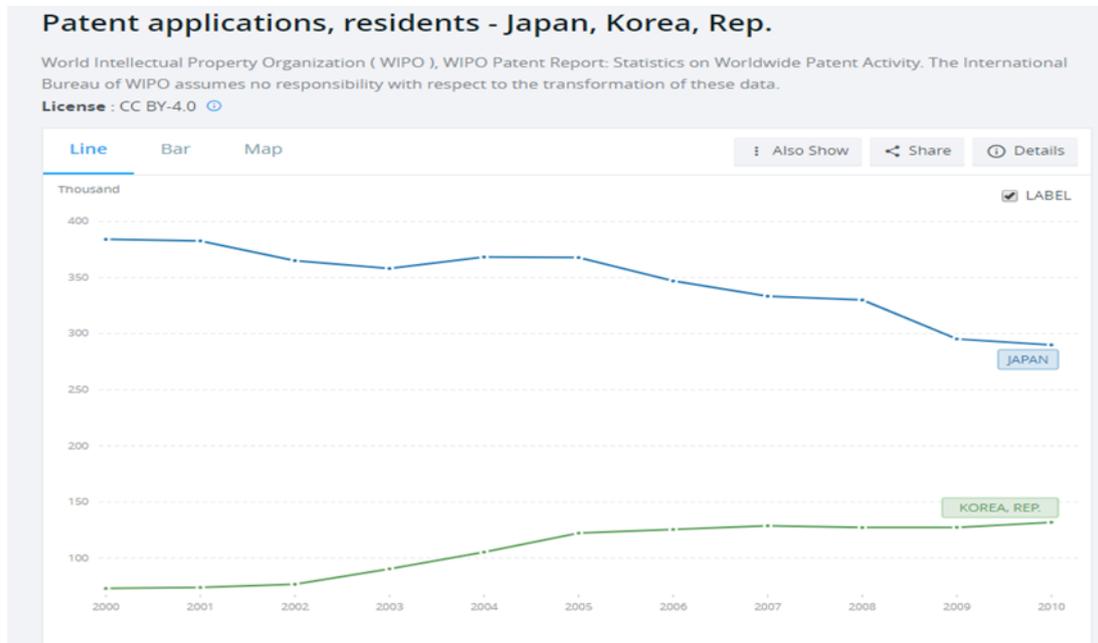


Figure 3 The Number of Patent Applications, residents

## 2.2 Education Policy

Another factor that promotes the growth of South Korean economy is the development of education. In 1940, 78% of the population over 12 years old were illiteracy[1]. The low education level and the lack of sufficient labor hindered the development of the productive forces. Therefore, the South Korean government implemented three policies to promote educational reform. The first policy is the reform of the educational structure and the training of people to apply what they have learned into practice. The transform in education was firstly focused on the elimination of illiteracy and the popularization of primary education. Before 1945, there were only 2,834 primary schools in Korea. In 1964, there were 4,496 primary schools. The rate of increase counts up to 58.6%. From the end of the Korean War to 1959, South Korea implemented the 6-year-compulsory-education-plan to promote the compulsory education. As a result, 96% of school-age children received compulsory education and the illiteracy was almost eliminated[3]. Since the 1960s, the free population resources in South Korean became abundant. Transforming the population resources into reliable labor resources was the key point to further develop the economy, changing it from import substitution into export-oriented. At that time, the South Korean considered that the reasonable structure of scientific and

technological personnel for a mature industrialized country was ladder-like, with 5% of scientists, 10% of engineers and technicians, 40% of technicians and 45% of skilled workers. In order to do that, South Korean government developed secondary education. From 1960 to 1975, the growth rates of junior and senior middle schools in Korea were 86.8% and 80%, respectively. Besides, from 1957 to 1972 the number of professional high schools in South Korea grew from 276 to 539, almost doubled[4]. Since 1963, the number of students in vocational high schools has increased from 156,000 to 886,000, with an average annual growth of 9.07%. Meanwhile, the proportion of vocational high schools in the total number of students in senior high schools has increased from 42.16% to 45.55%. The development of education covered the need of the skilled labor for the economic growth, and accumulated human capital for the later economic development as well. In 1993, for example, engineering, business and comprehensive vocational high schools accounted for 21%, 33% and 33%. They added up to 87%. The development of engineering, business and comprehensive Posts met the needs of the rapid growth of industry and commerce, and was in line with the development of industrialization, urbanization and aquaculture in Korea.

The second policy is to realize the combination of industry and school and promote the transformation of industrial structure into high technology. From 1960 to 1989, the industrial structure of South Korea changed fundamentally.

In the past 30 years, the proportion of primary industry decreased by 26.5%, while that of secondary industry increased by 24%. In the early 1970s, the Korean government issued a policy of cooperation between industry and schools. According to the policy, enterprises should sign contracts with the vocational schools of their counterparts, provide experimental sites, equipment and funds to schools. In turn, schools should train technical talents in accordance with the requirements of enterprises. After the implementation of this policy, the number of vocational high schools in South Korea increased from 444 in 1978 to 639 in 1983. The number of students at school increased from 236,000 in 1978 to 886,000 in 1983, from 44.5% of the number of students in high school to 45.4%. Implementing this policy is a successful move for Korea to directly serve education in production and accelerate the transformation of knowledge into technology.

The third policy is patriotism education. For example, the "Body Soil Fuji" education in South Korean elementary schools is very effective in fostering patriotic culture. "Body Soil Fuji" means that the people who grow on this land are not separated from this land, and only the food on this land is beneficial. For modern South Korea, this spirit means that Koreans have to love their country. To protect the interests of their country, the industrial and agricultural products they used should be domestic, no matter how cheap and good the foreign products are. The support of domestic products promoted the domestic production in South Korea. Hence, patriotism played a very important role in promoting South Korea's economic construction.

### ***2.3 Social Income Distribution Policy***

When the overall economy in South Korea was getting better and better, another problem arose. The capitalists were getting richer and richer, while the lower class remained poor. Even in the late 1970s there were massive strikes. To narrow the income gap between different classes, in the 1980s, the South Korean government pursued the political democratic reform and realized the corresponding economic income distribution policies. Among these policies, the most important one is housing policy. In the process of rapid economic development and the popularization of university education, the wages of the working class were gradually at the same level, more people have the ability to buy a house than before. Therefore, the demand for housing increased, and the price of land soared accordingly. Disparity in income from properties such as housing became larger. To solve this problem, South Korean government established a complete tax adjustment mechanism for the circulation, retention, inheritance and other aspects of housing. In order to protect the demand for self-occupation and combat speculative demand, especially in the circulation of housing. Government exempted income tax on non-premium residential transfer income. However, for the rapid accumulation of income tax on the transfer of

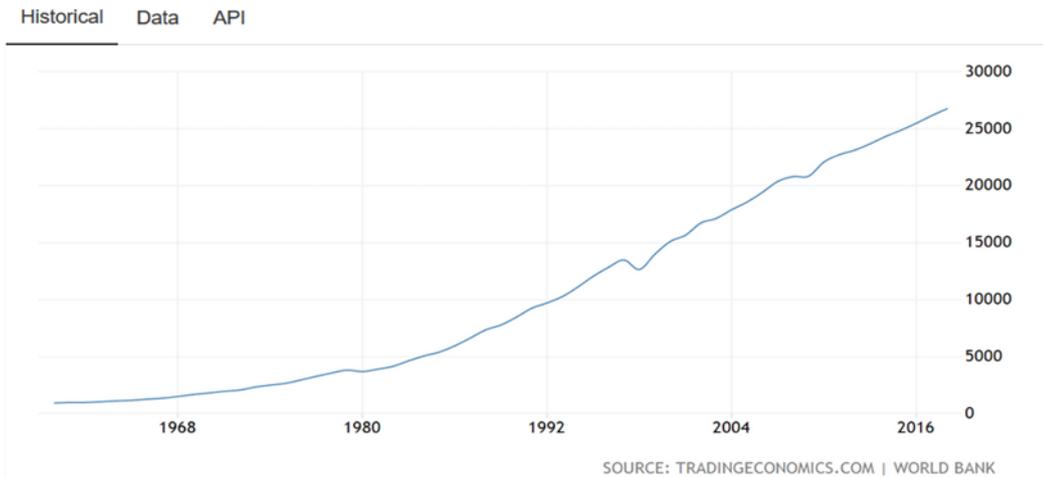
high-end residential and commercial and residential residences, the actual tax rate may be as high as 75%. In addition, the South Korean government increased the cost of housing construction and expanded the housing supply in society so that the housing resources can be distributed evenly in the country.

### **3. THE PREDICTIVE IMPACT OF POLICIES ON THE ECONOMIC GROWTH**

The first type of policy is called "Industrial Development and Technology Innovation Policy". This type of policy mainly includes policy decisions made by the Korean government in terms of industrial development and technological innovation in order to better meet its own national conditions. In the demand formula,  $Y = C + I + G + EX - IM$ . Government spends money to change the economy from import substitution to export-oriented. In the process, because of the change in production strategy, the government needs to reinvest in the production industry to build more factories to achieve industrial reform. So the investment called "I" in the formula will increase. With the development of Korean industry, the scale of Korean heavy industry and new technology industry is getting larger and larger. This enables South Korea to export more products abroad. Moreover, the development of industry also led to a smaller and smaller share of agriculture, resulting in the need of importing food from abroad. So in the demand formula, both EX and IM will increase. In addition, the South Korea government invests more in the R&D to develop their science and technology. So the government cost, G, in the formula will increase. Put all of these factors together, the GDP, Y, in the formula is predicted to increase. Since the expenditure on the R&D increases, A in the supply formula, standing for knowledge, will increase. Besides, the growth of science and technology will lead to more efficient work. The efficiency on the formula, E, will increase as well. In general, the GDP on the supply formula called Y will increase.

For the second policy about educational policy. South Korean government invests money on the education, the investment as G will increase. With the development of vocational schools, the number of high-tech talents will increase. The factors labour L and knowledge A will increase. Finally, high-tech talents can bring more new technologies and science, these new technologies can effectively improve the work efficiency. Therefore, the factor efficiency E will increase. All of these factors can give a positive influence to GDP Y in the formula.

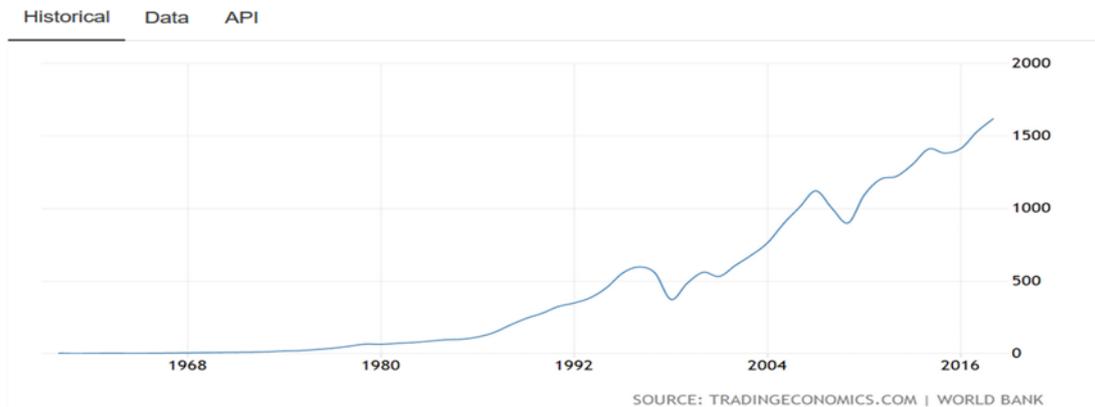
The third policy is social income distribution policy. With the help of this policy, the income gap between the people narrowed and the income level became more balanced. People can spend more money. Hence, the consumption C in the demand formula will increased. This policy can increase GDP effectively.



**Figure 4** Real GDP Per Capita

As is shown in fig. 4, the real GDP per capita looks like a gradual upward curve. The upward trend emerges from

about 1990. But the curve is not smooth. There is a small decline in 2000 and 2010, and then it continues to rise.



**Figure 5** Real GDP

The growth trend of the real GDP per capital is in the whole smooth. However, there are two declines in this process. One appears around 1997. The other appears around 2008. These two economic decrease maybe caused by the recession and global financial crisis, in consideration of the financial events at that time.

#### 4. CONCLUSION

The economic development in South Korea does not happen overnight. The government played an indispensable role in making policy decisions. The most appropriate policies in the light of the national conditions of South Korea were promulgated. Science and technology innovation policy aimed to change the manufacturing structure. South Korean turned the industrial pattern from light-industry-dominated to heavy-industry-dominated then to high-tech-industry-dominated. To support the transforms of industrial pattern, the policies for the education-reform were formulated. As a result, a large number of talented workers are cultivated in

coordination of the needs of the enterprises. Furthermore, the government enacted income distribution policies to adjust the widening income gap.

Although the economic development in South Korea is judged by model prediction as a smooth growth curve, there are also some factors that exerted negative influences on it. Each country has its own social, historical and resource characteristics. How to take advantages of these factors and make appropriate policies in line with their own national conditions is vital for the economic growth.

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