

South Korea is the country in East Asia, occupies the part of the Korean peninsula. South Korea makes up about 45% of the peninsula's land area. The capital is Seoul. The country is bordered by the Democratic People's Republic of Korea (North Korea) to the north, the East Sea to the east, the East China Sea to the south and the Yellow Sea to the west. Geologically, South Korea is largely mountainous, with small valleys and narrow coastal plains. The country has two volcanic islands – Cheju, off the peninsula's southern tip and Ullung in the East Sea. The total population in South Korea was estimated at 51.7 million people in 2021 and expected to reach 51.98 million by the end of 2022, according to the latest census figures and projections from Trading Economics. The population of South Korea is highly homogeneous; almost the entire population is ethnically Korean, and there is a small minority of ethnic Chinese permanent residents. The number of foreigners is growing, especially in the major urban areas; people from Japan, the United States, and China make up the largest foreign populations. All Koreans speak the Korean language. The government instituted after a constitutional referendum in 1987 is known as the Sixth Republic. The constitutional structure is patterned mainly on the presidential system of the United States. The president, since 1987 chosen by direct popular election for a single five-year term. The prime minister is appointed by the president and approved by the elected National Assembly.

Korean Economy

South Korea has experienced one of the largest economic transformations of the past 60 years. It started as an agriculture-based economy in the 1960s, and it became the 11th largest economy in the world in terms of gross domestic product (GDP) in 2016.

In the early 1960s, the country pushed ahead with export-oriented economic development plans. The major export items were light industrial products from small factories or raw materials. In the 1970s, the country invested in heavy chemical facilities and laid the basis for the export of heavy industrial products. Then became the leader in semiconductor and display sectors. South Korea's exports, which amounted to only USD 32.82 million in 1960 and reached USD 542.2 billion in 2019. The country's GNI per capita was a paltry USD 67 in 1953 around when the government was established, rapidly increased to USD 32,115 in 2019.

Several attributes support South Korea developed and growth the country economy. The export-oriented

GDP and Per-capita GNI

[Bank of Korea, 2020]



policies of South Korea are one of the most important factors of its success: South Korea is now one of the top 10 exporters in the world.

Two additional factors have contributed to the increase in international trade and industrialization in South Korea:

- An improvement in the business environment
- Policies incentivizing investment in innovation

According to the World Bank, South Korea is ranked No. 5 in terms of the overall Ease of Doing Business ranking in 2020, while USA is ranked No. 6, as seen in the table below.

Ease of doing business ranking in 2020		
Rank	Economy	DB Score
1	New Zealand	86.8
2	Singapore	86.2
3	Hong Kong SAR, China	85.3
4	Denmark	85.3
5	Korea, Rep.	84.0
6	United States	84.0
7	Georgia	83.7
8	United Kingdom	83.5
9	Norway	82.6
10	Sweden	82.0

How South Korea become leading in innovation.

About the business environment, South Korea government created an environment for home-grown industries to thrive and leading the business development with innovation. The Innovation Index judges countries based on their research & development (R&D) intensity, manufacturing value-added, productivity, high-tech density, tertiary efficiency, researcher concentration, and patent activity. South Korea, it turns out, stands out for its significant investment in R&D and manufacturing, both of which are engrained in the country's culture and processes. There's a near-total agreement in South Korea that "R&D is essential to have a future," said Lee Kyung-mook, a professor of business management at Seoul National University.

The first major investment was begun in 1961, proposed by the Korean government when Park Chung-hee was the president. He implemented a five-year economic plan centered around supporting research and development (R&D). This resulted in the Korea Institute of Science and Technology (KIST) establishment in 1966 and the Ministry of Science and Technology a year later.

The historically of 'top-down' innovation system that promotes "close collaboration between government, industry, and the academic community in the process of nation building". Top-down system is a system that motivated by the senior management and given an innovation effort. It make sure that resources are allocated to the area that are most crucial and to the company

These instruments supported the emergence of large industrial groups called chaebols, which were owned and controlled by South Korean individuals or families. The government pushed the chaebols to invest heavily in R&D while shielding them from competition. With increased R&D intensity that focused on applied knowledge, chaebols such as LG, Lotte and Samsung were driven towards new heavy industries, including petrochemicals, car manufacturing and shipbuilding, as well as consumer electronics. Also, local universities now had the capabilities to launch exciting innovations that would be affordable and accessible for millions, both locally and abroad.

Case study of Chaebol-Samsung

The company that started life as a grocery store trader in 1938 is now South Korea's largest chaebol, operating in industries as diverse as electronics, insurance, construction, and shipbuilding. In 2018, it produced roughly 15% of the nation's gross domestic product (GDP). The Samsung Group simply Samsung is a South Korean multinational conglomerate headquartered in Samsung Town, Seoul, South Korea. It comprise numerous affiliated businesses, most of them united under the Samsung brand. As of 2020, Samsung has the 8th highest global brand value.

Its founder, Lee Byung Chul, with help from government protectionist policies, expanded into textiles after the Korean War, electronics in the 1960, then heavy industries, aerospace and computing during the 1970 and early 1980. By the 1990 and 2000, Samsung was a world leader in tablets and mobiles, and in the design and manufacture of computer chips. The company is South Korea's leading corporate institution in the Nature Index by far, based on contributions to research articles published in the 82 high quality natural science journals tracked by the Index. With a share of 10.36 in 2019, it ranked 28th among the country's institution overall, eclipsing its nearest rival in the cooperate ranks, LG, which had a share of 1.99. Samsung also features in each of South Korea 's nine leading cooperate-academic collaborative pairs in the Nature Index. The most productive pairing is with Sungkyunkwan University (SJKU) in Seoul, with 159 Joints article between 2015 and 2019. Their collaboration is particularly strong in electrochemistry and the development of new energy resources such as lithium-ion batteries. Other partnership include Seoul National University in Seoul, and the Korea Advanced institute of Science and Technology (KAIST) in Daejeon.

Case study of Chaebol-Hyundai

The Hyundai Motor Group is the largest member of the chaebol. According to the Organization International Constructures automobiles, it was the world's third-largest vehicle manufacturer by product volume in 2017, behind Japanese Toyota and German Volkswagen Groups. Chung Ju-yung or Jung Joo-yung, was a South Korean entrepreneur, businessman and the founder of Hyundai Groups of South Korea. Raised as the eldest son of a poor Korean farmer, he became the richest man in South Korea. Chung was an integral part to the rapid development of Korea's economy, growing Hyundai Heavy Industries to be the largest ship builder in the world, as well as growing Hyundai Motor Group into the largest automobile manufacturer in Korea, and the third largest in the world. Korea generated the first domestically produced car by assembling the components in 1955. In the mid-1960, the government enacted the Automobile Industry Protection Law, which provided the automobile industry in Korea with protection measures, such as prohibition of import of completed cars, exemption of tax to the producers and abolition of import tariffs subjected to the components. During the 1960 the automobile companies in Korea relied on the knock-down (KD) method for components assembly to produce automobiles. Tens of Korean engineers were trained in a Japanese automobile company, Nissan. Three companies, Hyundai, Kia and Shinjin. The Korean government set the Automobile Industry Long-term Promotion Plan in May 1974. Since then, the government actively intervened in the process of automobile industry development in Korea. It set the goal of developing domestically produced economical cars with a local content ratio of over 95 percent and the target of producing more than 50,000 cars each year to gain from economies of scale. The government also raised the import tariff rate from 150% to 250% in 1974. The government declared to provide very generous tax incentives such as 50 percent reduction of excise tax and 67 percent reduction of automobile consumption tax as well as financial assistance for the first national car, meeting the requirements of the government. These motivated the automobile producers to produce their own brand model in the mid-1970. In 1975, Hyundai Automobile established an integrated production plant in Yangsan¹ and began to produce its own brand model, Pony, for the first time. The overall design of the

production facilities was constructed by a Japanese automobile company Mitsubishi. Although merely 37,000 cars were produced in Korea in 1975, the production increased to 378,000 cars in 1985. Korea's production of automobiles continued to increase during the 1980. In 1990, the import tariff rate on import of passenger cars fell from 50 percent to 20 percent and then to 8 percent in 1995. The number of cars produced in Korea exceeded 4 million during the 2010

From Hyundai case study, not only R&D that the South Korea government support chaebols but also in other elements for example tax benefit, increase the import tariff to protect the local manufacturing system. Also last year, Hyundai Motor Company recently signed a memorandum of understanding (MOU) to work with the South Korean government as well as logistics, battery, and mobility companies to demonstrate the electric vehicle (EV) battery leasing business. Through this agreement, Hyundai aims to foster an EV ecosystem by alleviating the initial cost burden of EV purchases and by providing innovative services that enable eco-friendly reuse of batteries

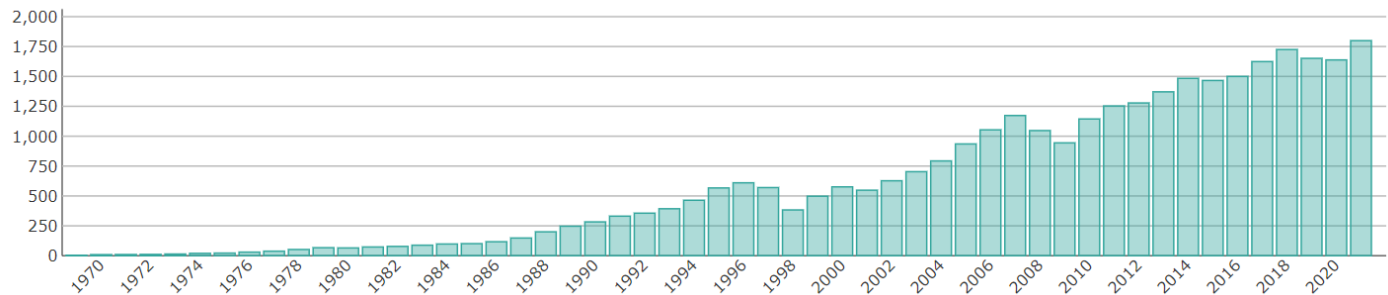
Regarding the two cases study are raised, although government funding continued to promote R&D spending and programs to boost translational development and scientific, engineering and managerial expertise, the weight of major investment in R&D shifted to the corporate sector in search of patents and profits. Private R&D spending accounted for nearly 80% of South Korea's total R&D spending in 2019, ahead of leading innovative nations such as Germany, Sweden and Switzerland, at 70%. The shift was supported by R&D tax incentives and importation of foreign technology.

The South Korean government's systematic approach has been the crucial factor in creating an innovative economy adept at turning ideas from laboratories into products and industries.

The success of driven country to the leader of innovation and able to compete with developed countries, the South Korea government did a very important role at the beginning to drive R&D. After the growth phase takes off, it is advisable to change to private sector-driven R&D. The cooperation must be very strong between academia, the government and the private sector at a local level and ideally there will also be cooperation with advanced countries. The final stages of the successful R&D policy are the need to advance into the global market and ensure the maximum autonomy and creativity of the private sector. Not only the cooperate with the private sector, but government also found that R&D is an important part of Korea's Official Development Assistance (ODA) and that help Korean initiatives to develop innovative technology in developing countries. One of measurement that can identify the success of long-term economy plan of the South Korea government and the cooperation strategy between government, University and private sector is GDP. The gross domestic product (GDP) measures of national income

and output for a given country's economy. The gross domestic product (GDP) is equal to the total expenditures for all final goods and services produced within the country in a stipulated period of time.

The growth of the South Korea is shown in figure below.



The core of the innovation system in South Korea

The core innovation of South Korea is composed of three basic components. An endowment is the first, government leverage is the second, and industry leverage is the third. The endowments of a country and how the government and business utilise them form the basis of its innovation system. Government policy initiatives, incentives, and regulations, as well as plans, investments, and training from industrial firms. The first one is the Korea endowment. South Korea does not have many natural resources. However, natural resources are not necessarily. Socio-economic, cultural, and political are also important. South Korea has compensated for its lack of natural resources by investing heavily in education, science and technology, and a "knowledge-based" economy.

Next is Government leverage; the government wants to achieve a goal of increasing R&D investments as a share of GDP, so the government launched a variety of financial incentives to encourage private investment in R&D. The government also spends extensively on infrastructure.

The last one is industry leverage. Over the past two decades, South Korea has transformed itself into a leading innovator by adopting Western business practices and making aggressive R&D investments.

Today, innovation in the South Korean economy is primarily driven by the private sector. Those firms typically span a broad of related and unrelated businesses and control about 70% of South Korea's total spending on R&D (with the government contributing about 25%)

Innovation policy

A recent development in Korea's innovation policy gives power to newly National Science and technology to allocate the government R&D budget up to 70% of the total budget. One of the national science and technology took 16 billion dollar budget in 2012, its almost half of the allocation was made up to public research institutes, about one-fourth of each university. Technology areas selected for long-term funding in the 2012 National Science and Technology Commission budget were space and avionics, high energy physics, construction and maritime industry, renewable energy, ICT, system-on-chip semiconductors and LEDs, and machine and equipment technology

At the operational level, the MKE and MEST have the authority to allocate around 30% of the R&D expenditure. MKE's science, technology, and innovation policy are implemented in the form of Science and Technology Basic Plans every five years. Since the late 1990s, when the first of four S&T Basic plans were implemented, the government has focused on R&D spending, emphasizing the role of researchers in the economy, and boosting innovation policy.

University and private firm collaborations

Even though industrialists frequently lack confidence in universities' ability to conduct quality research, universities are a significant collaborator in that work. It is clear that in R&D activities, colleges are used to getting agents rather than providing them. This fact suggests that in order to promote university-industry R&D collaboration, a give-and-take mindset should be cultivated in academic institutions. If universities outsource more of their research projects to private companies, it might result in university-generated collaborative R&D with private companies. Our study's findings also showed a strengthening of government initiatives to support collaboration between academia and industry in research and development. Two examples of government policy programs demonstrated how policy targets, particularly those that support university-industry R&D collaboration, frequently appear in both ongoing and freshly developed policy programs. The government's R&D money has been allotted more and more to specific policy initiatives centered on interdisciplinary collaborative R&D between academic institutions and for-profit businesses.

Challenge of growth

The South Korea, which has a population of 50 million, is facing problems such as growing inequality and the risk of stagnating growth. Not only the inside country problem, the impact from other country ex China's economic slowdown has impacted the manufacturing exports. Also, the overall Korea's economic growth have growth faster than the domestic labor market which leading inequality. The implementing of dual system and the automated in manufacturing also be part of the problem and have brought down progress on talks between labor groups, management, and the government. The country also facing unbalancing in terms of educational opportunities. Education is highly prized by South Koreans, whose social and economic status is determined to a large extent by their academic achievement. This is why parents lay great emphasis on providing high-quality education for their children.

South Korea is also aging faster than all other OECD (The Organization for Economic Co-operation and Development) countries, a development likely to become one of the key factor for long-term country development. Moreover, country need to fix and develop necessary skills to match labor market demand. Those challenges need to be overcome in order to maintains its competitiveness and innovation in the future. A key priority for the South Korea is to diversify its economy, including through high-value innovation and measures to increase global competitiveness, and create new growth industries for the future, particularly in the service sector.

Conclusion

The South Korea is one of the long history countries in several elements, historical, socialization and economy. This is one of the countries that has most interest economy plan.

The government has long-term vision and put a robust strategy to focus and put big investment in Research and Development. Also playing the most important role to link and support the research institutes and Universities to develop the innovation and technology for private sectors to grow their business. Once the private sector able to grow the business by themselves then they can invest and focus on the innovation development and make the overall country's business move even faster. Due to the strong support between the three parties, government, research institutes and private sectors, become the most powerful engine and turn over the South Korea from agricultural, textiles and light industrial country to be innovation and technology leader in the world with in about 60 years. Two additional factors have contributed to the increase in international trade and industrialization in South Korea:

- An improvement in the business environment
- Policies incentivizing investment in innovation

However, the South Korea also facing several challenges, for example, the gap of labor skills development, the slowing down of global economy, the increasing of aged population, etc. That are the problems that government need to figure out and find the most suitable way to overcome those problem. The government need to thing about the cooperation with other countries, aware of overall environment impact and concern about sustainability growth.

Reference:

1. [South Korea - Daily life and social customs | Britannica](#)
2. [South Korea Population - 2022 Data - 2023 Forecast - 1960-2021 Historical - Chart \(tradingeconomics.com\)](#)
3. <http://databank.worldbank.org/data/download/gdp.pdf>
4. Iwulska, Aleksandra. *Golden Growth: Restoring the lustre of the European economic model: Country Benchmarks (PDF)*, World Bank, 2012.
5. [Korea Information - Economy — Korean Cultural Center New York \(koreanculture.org\)](#)
6. [Rankings \(doingbusiness.org\)](#)
7. [How South Korea became the “most innovative country” in the world - Christensen Institute : Christensen Institute](#)
8. [How South Korea made itself a global innovation leader \(nature.com\)](#)
9. [Developing countries can learn from South Korea’s research and development experience | UNIDO](#)
10. [South Korea GDP - 2022 Data - 2023 Forecast - 1960-2021 Historical - Chart - News \(tradingeconomics.com\)](#)
11. [Why innovation is king in South Korea | Asia | An in-depth look at news from across the continent | DW | 10.02.2016](#)
12. [IDA Document D-4984 FINAL Korea Innovation Policies.pdf \(wilsoncenter.org\)](#)