

Boosting Productivity to Sustain Economic Growth in South Korea in the Face of a Shrinking and Ageing Population

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Abstract

South Korea's labour productivity increase during 1960-2023 was one of the fastest among G20 countries, although its level still lags the OECD average. Its rapid economic transformation, particularly during its high growth era (1962-96), has been studied as a model for developing countries, although there are diverse opinions on whether Korea's success was government-driven or market-led. Productivity and output growth remained consistently robust during this period, while policies shifted abruptly from general export promotion to the Heavy and Chemical Industry drive and to market reforms. This suggests that rapid growth was primarily due to getting the fundamentals right: i) a high level of investment in education; ii) outward-oriented policies; iii) maintaining macroeconomic stability; iv) encouraging business investment; and v) developing rural areas.

However, extensive government promotion of specific industries during the 1970s resulted in a period of "inefficient growth" with declines in total factor productivity (TFP). Moreover, Korea failed to develop sufficiently the rules for a market economy, leaving it vulnerable to the 1997 Asian Financial Crisis. Despite many reforms since then, Korea's potential growth rate has slowed to 2%, limiting the scope for further convergence to the highest-income countries. Growth is limited by the legacy of Korea's development strategy, which left it with a polarised economy; large productivity gaps between the manufacturing and service sectors and between large firms and SMEs, as well as labour market dualism. Moreover, with the world's lowest fertility rate, Korea faces heavy demographic headwinds, as well as diminishing returns from its large investment in factor accumulation, making TFP the key to sustaining growth. This requires increasing openness by further reducing barriers to trade, FDI and foreign workers, improving the innovation system, reforming education, improving SME policy, strengthening competition policy and enhancing labour market flexibility.

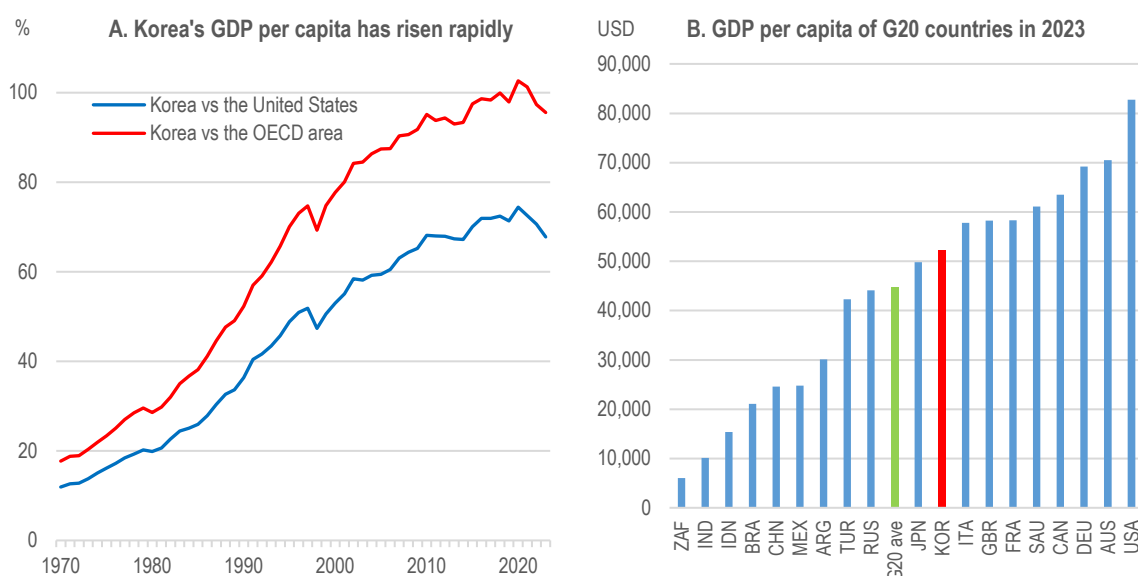
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Boosting Productivity to Sustain Economic Growth in South Korea in the Face of a Shrinking and Ageing Population

The transformation of South Korea (hereafter Korea) from one of the poorest countries in the world in the 1950s to the 14th largest economy in 2023 is exceptional in economic history. The “Miracle on the Han River” boosted per capita gross domestic product (GDP) from 11% of the US level in 1970 to nearly three-quarters by 2020 (Figure 1, Panel A), driven by increasing employment and rapid gains in labour productivity. By 2020, Korea’s per capita GDP had surpassed Japan and the average of the Organisation for Economic Co-operation and Development (OECD) countries. In 2023, GDP per capita overtook Japan and the G20 average (Panel B). Rapid economic growth significantly enhanced well-being and boosted life expectancy from 57 years in 1965 to 83.5 years in 2023, more than two years above the OECD average. Korea demonstrates that a country can transform its social and economic conditions over a few decades.

Figure 1. Korea’s per capita GDP has converged rapidly to high-income countries



Note: Per capita GDP converted using PPP exchange rates. The OECD includes 38 (generally high-income) countries. Source: Panel A: [OECD Data Explorer • Annual GDP and consumption per capita, US \\$, current prices, current PPPs](#), accessed 8 April 2025; Panel B, World Bank, [GDP per capita \(current US\\$\) | Data](#), accessed 26 May 2025.

The active government role in Korea’s rapid transformation has sparked a debate on whether it was government-led or market-driven. The government intervened systematically through multiple channels to foster growth, particularly during Korea’s high-growth era (1962-96). The challenges posed by the COVID-19 pandemic and intensifying geopolitical tensions have increased interest in the potential benefits of an activist industrial policy. Indeed, in recent years, many major economies have implemented industrial policies aimed at mitigating supply chain vulnerabilities, enhancing technological competitiveness, securing strategic industries and strengthening national security (Lee, 2025).

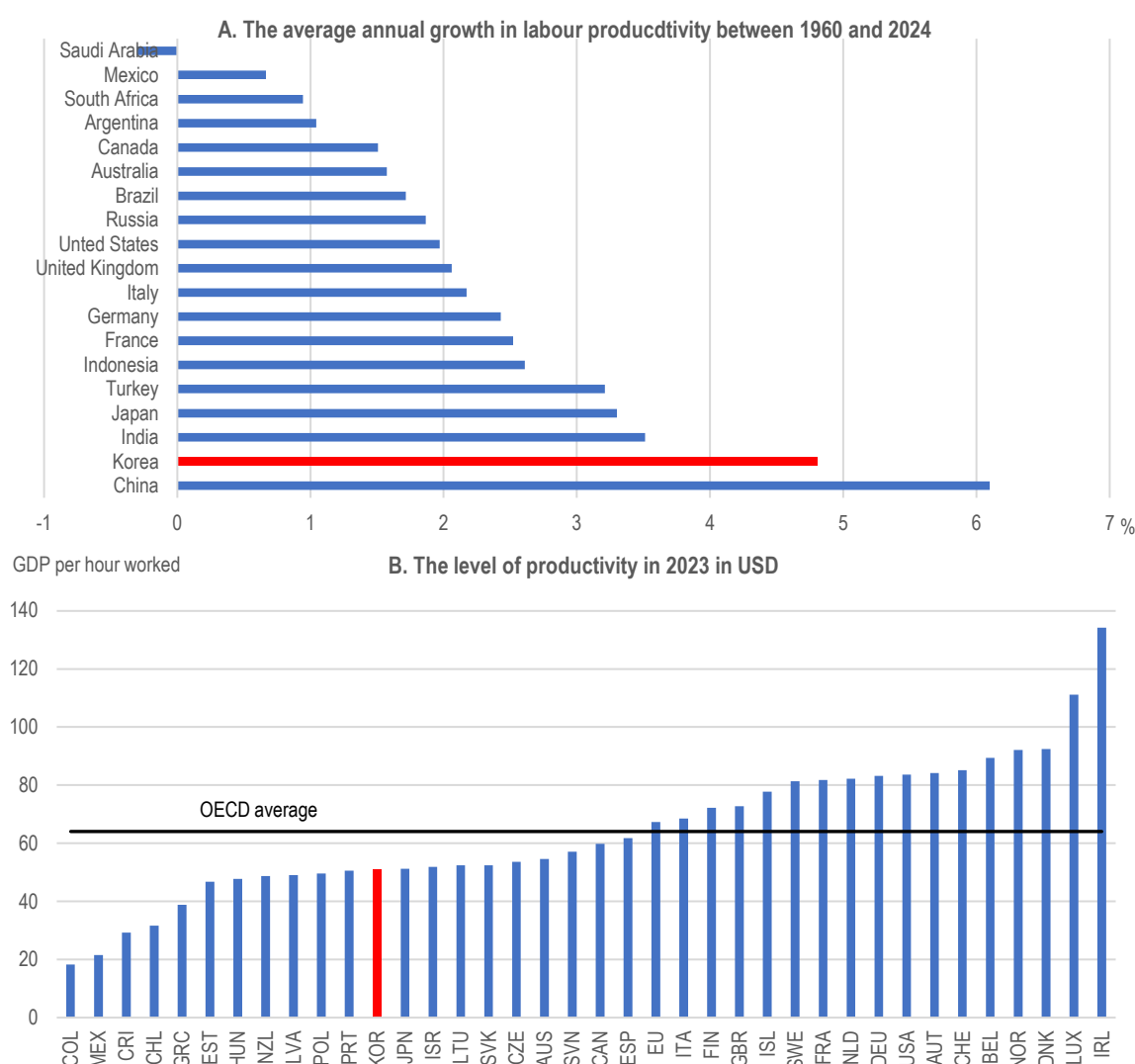
This paper begins with a review of Korea’s overall labour productivity performance during 1960-2023 compared with other G20 countries and indicators of its performance in five key drivers of productivity. The second section focuses on how Korea’s shifting economic strategies since the mid-1950s – from import substitution, export promotion, industry and firm-specific policies, market reforms, responses to crises and a focus on a knowledge-based economy – influenced labour productivity. It looks for links between shifting policies and the contributions of capital deepening, labour quality and total factor productivity to labour productivity. The lessons from Korea’s economic policies and their impact on productivity are summarised

in the third section. The final section takes a forward-looking perspective on the policies to sustain productivity growth as Korea deals with demographic change.

An overview of Korea's productivity trends since the 1960s

Labour productivity, the primary determinant of economic growth, increased at a 4.8% annual rate over 1960-2024 in Korea, second only to China among G20 countries (Figure 2, Panel A). Still, it remained one-fifth below the OECD average in 2023 (Panel B), reflecting long working hours and relatively low total factor productivity (TFP, *i.e.* output growth that cannot be attributed to rising inputs of labour and capital) growth. Korea's labour productivity is close to the average of OECD countries, suggesting considerable scope for further convergence toward the highest-income countries.

Figure 2. Despite its rapid growth, Korea's productivity level is still below the highest-income countries



Note: Labour productivity is measured as GDP per hour of work. The data for India and Türkiye begin in 1971, for Russia in 1993 and for South Africa in 2002.

Source: Panel A – The Conference Board, *Total Economy Database*, September 2025; Panel B – OECD, [GDP per hour worked](#) | OECD, accessed 14 April 2025.

Five drivers of productivity growth

Korea's labour productivity gains over the past 65 years were driven by each of the five factors identified in the typology developed by The Productivity Institute (van Ark et al., 2023):

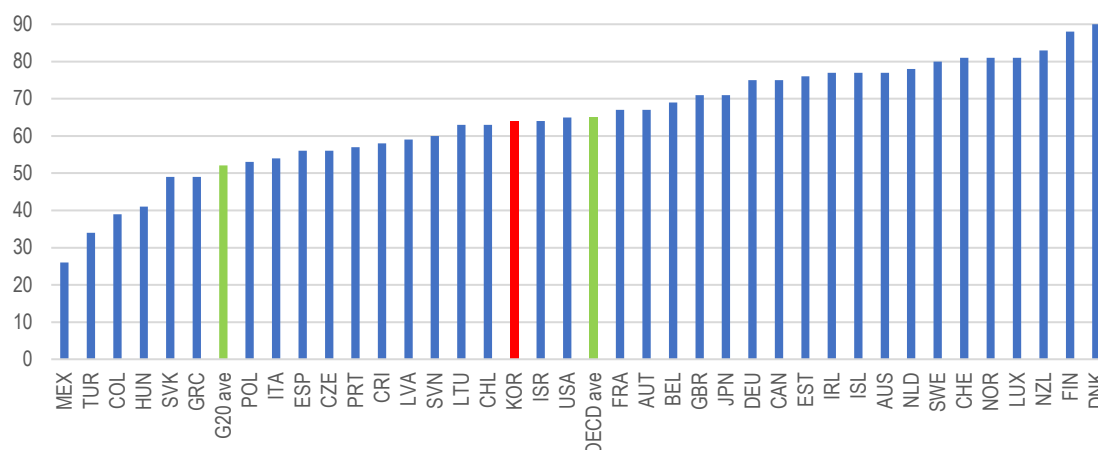
- Strong foundations for growth based on institutions and frameworks, government capabilities and macroeconomic policy.
- The accumulation of factors of production, notably fixed investment and human capital.
- Technological change driven by innovation.
- Improved resource allocation through better functioning of markets.
- Internationalisation through trade and foreign direct investment (FDI) policies.

Foundations for productivity growth: institutions, government capabilities and macroeconomic policy

Korea has experienced two military coups (1961 and 1980) and considerable political turbulence at times during its post-war history. Nevertheless, it has enjoyed relative stability since democratisation in 1987, excluding some political turbulence surrounding the impeachments of two presidents. Policies are implemented by the country's meritocratic civil service. Korea's "Corruption Perception Index" has improved significantly and now matches the OECD average (Figure 3). Inflation increased at a nearly 15% annual pace during 1960-80 (Figure 4), though less than in many developing countries. Since 1980, sound macroeconomic policies have created a low-inflation environment favourable for investment. Gross government debt has remained below 50% of GDP, less than half of the OECD average of 110% in 2023.

Figure 3. The Corruption Perceptions Index for Korea has risen close to the OECD average

In 2024; scale is 0 (worst) to 100 (best)

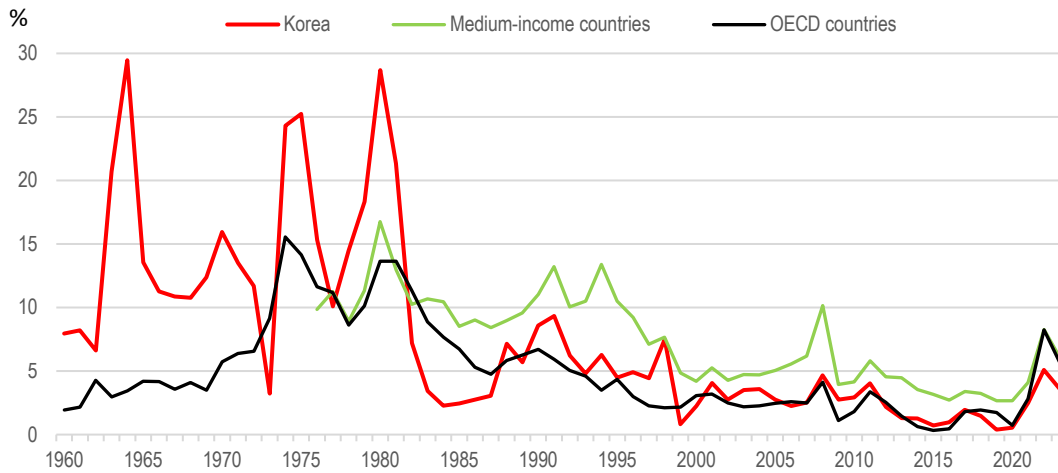


Source: Transparency International (2025), [Corruption Perceptions Index 2024 - Transparency.org](https://www.transparency.org/en/cpi).

Accumulation of the factors of production

Gross capital formation jumped from 10% of GDP in the 1960s to 30% in the 1980s and has remained around that level in subsequent decades (Figure 5, Panel A). Moreover, business investment as a share of GDP has exceeded 20% of GDP since 1987, outpacing other high-income G20 countries (Panel B). Investment has been driven in part by Korea's outward-oriented strategy, which prompted firms to build manufacturing facilities large enough to achieve economies of scale. In addition, the combination of an increasingly well-educated labour force and a relatively small stock of physical capital created high returns on investment, thus encouraging capital accumulation.

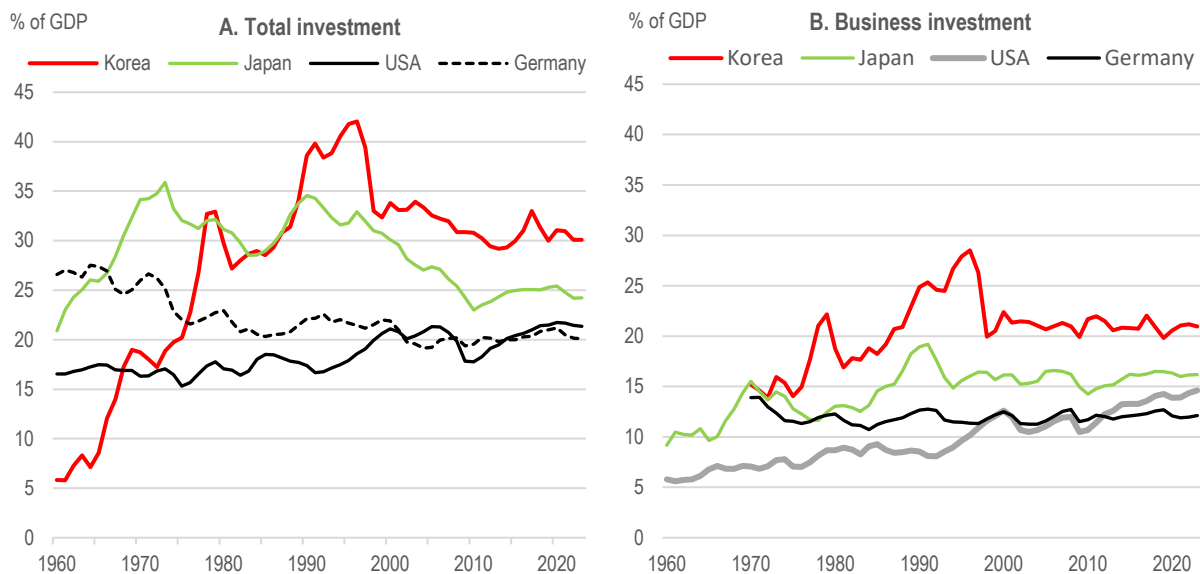
Figure 4. Consumer price inflation has moderated and is now in line with the OECD average



Source: World Bank, [Inflation, consumer prices \(annual %\) - | Data](#), accessed 17 May 2025.

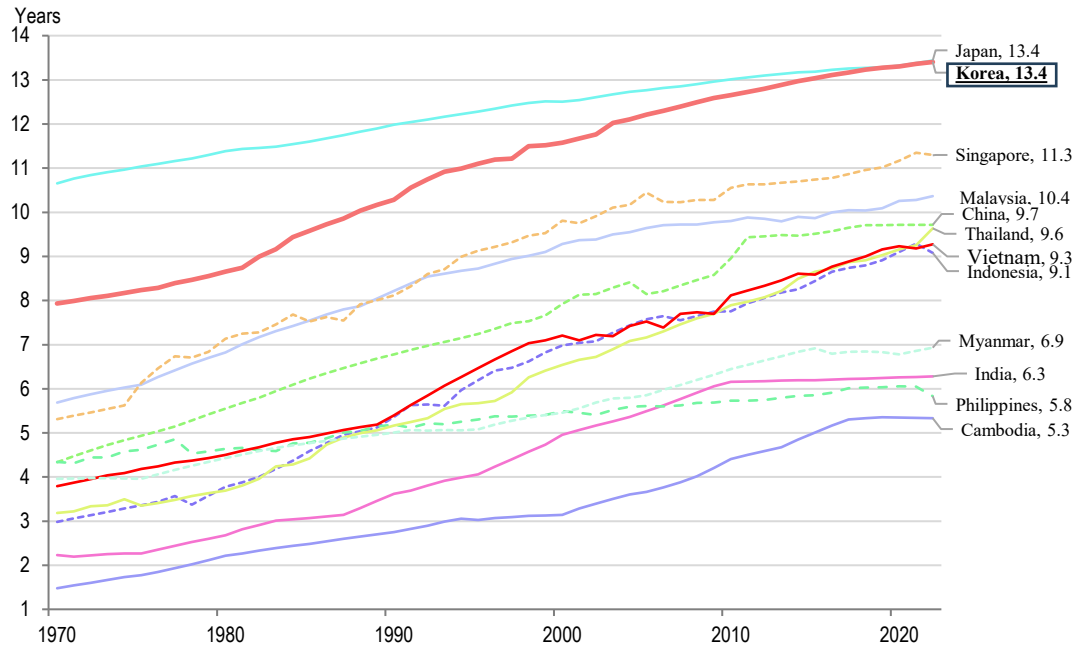
Korea's exceptionally strong emphasis on education has also played a key role in its productivity growth. With few natural resources, Korea had to rely on developing its human resources, beginning at the primary level and gradually working up to secondary and tertiary education (Koh, 2010). The average number of years of schooling increased from less than eight years in 1970, matching that in Japan by 2022 (Figure 6). Quality improvements matched the quantitative expansion of education. Korea is consistently among the top performers in the OECD's Programme for International Student Assessment (PISA), which tests 15-year-old students (Figure 7, Panel A). University attendance has soared, with more than 80% of upper secondary school graduates in 2005 entering tertiary education. Consequently, the share of young adults (aged 25–34) with a university degree in Korea is the highest in the OECD (Panel B).

Figure 5. Korea's high level of capital accumulation is a key driver of productivity growth



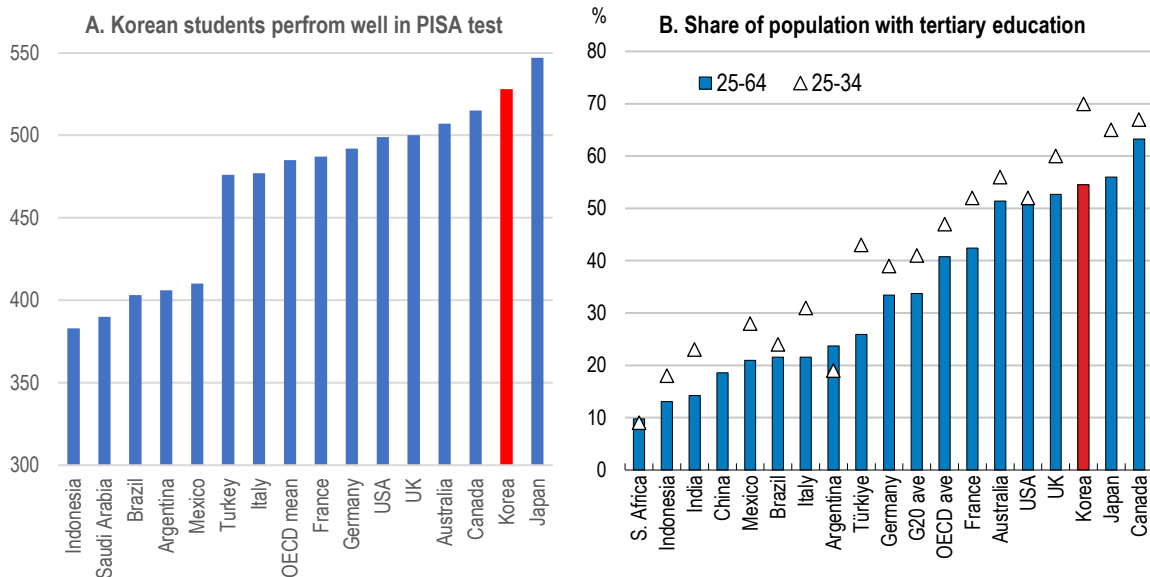
Source: OECD (2024).

Figure 6. Workers' average number of years in school in Korea has risen rapidly to match Japan



Source: Asian Productivity Organisation (2024), *Asia QALI database*, Asian Productivity Databook 2024.

Figure 7. Korea's educational performance stands out among G20 and OECD countries



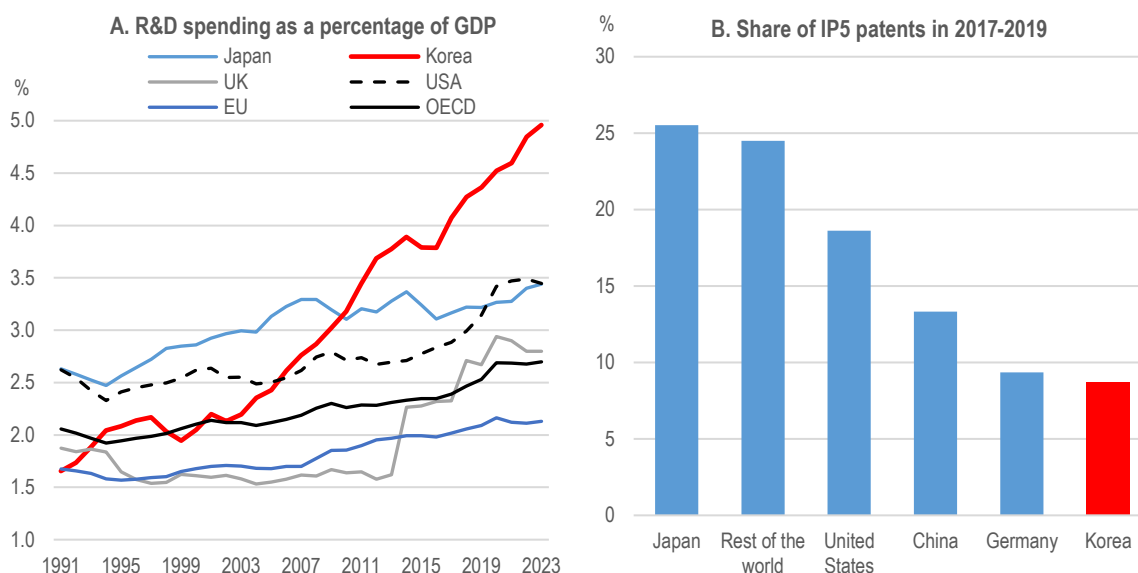
Notes: The OECD's Programme for International Student Assessment (PISA) tests 15-year-old students in science, math and reading. The results shown here are for science. Korea also ranks second in math and reading. China, India, Russia and Saudi Arabia do not participate in PISA. Data for Russia and Saudi Arabia are not available for Panel B. Source: Panel A – [PISA 2022 Results \(Volume I\) | OECD](#); Panel B. OECD (2024), *Education at a Glance*.

Technological and structural change

The rapid education gains facilitated technological change. In addition, R&D spending has risen sharply, reaching 5% of GDP in 2023, the second-highest among OECD countries (Figure 8, Panel A). Korea's share of IP5 patents (issued by the world's five largest patent offices) rose from 4% in 1998-2000 to 9% in 2017-

19 (Panel B). The number of patents filed in Korea in 2023 trailed only China, the United States and Japan and surpassed the European Union (WIPO, 2024). Korea is a top player in digital technologies, with outstanding digital infrastructure and a dynamic ICT sector (Pak, 2021). By 2013-16, Korea accounted for the largest share (21%) of IP5 patents in the 25 fastest-growing digital technologies (OECD, 2020).

Figure 8. Korea has become a world leader in several indicators of innovation



Note: Data in Panel B refer to families of patent applications filed within the five IP offices (IP5) by the earliest filing date, according to the applicant's location.

Source: Panel A – OECD, [Gross domestic spending on R&D | OECD](#), accessed 22 April 2025; Panel B – [OECD Science, Technology and Innovation Outlook 2023 | OECD](#).

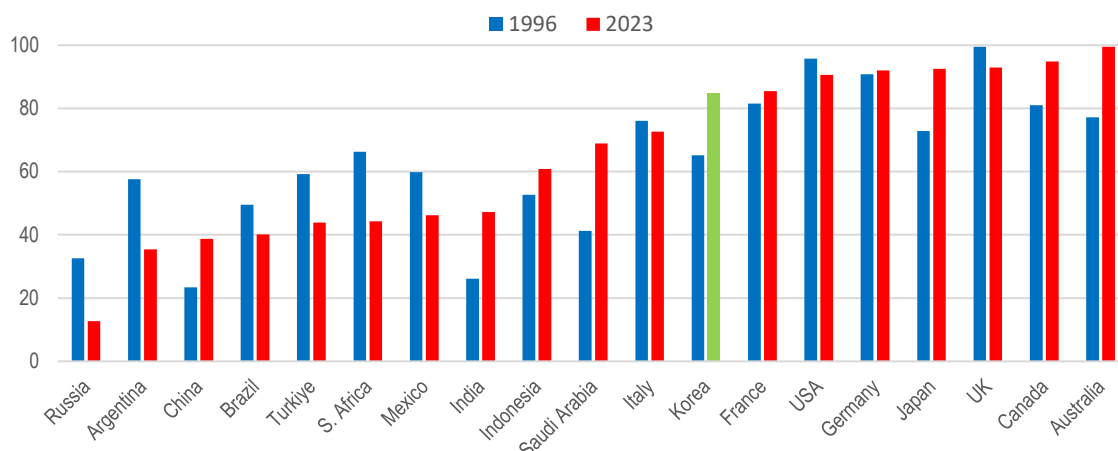
Improving market functioning and resource allocation

Korea is well-known for using industrial policy to drive productivity and economic development (Westphal, 1982). According to one study, Korea succeeded by “getting the prices wrong” (Amsden, 1989). Government direction and allocation of capital led to the rise of key business groups and industries, though at the cost of significant inefficiency (see below). This approach left Korea vulnerable to the 1997 Asian financial crisis. In the wake of the crisis, Korea’s Ministry of Finance and Economy stated, “Over the past thirty years of accelerated economic growth, former governments were deficient in developing the rules and principles of a market economy” (MOFE, 1998). Korea responded to the crisis by instituting such rules and principles. The new strategy led to a marked improvement in the quality of regulation in Korea between 1996 and 2023, in contrast to a deterioration in nine of the G20 countries (Figure 9).

Internationalisation through an outward-oriented growth strategy

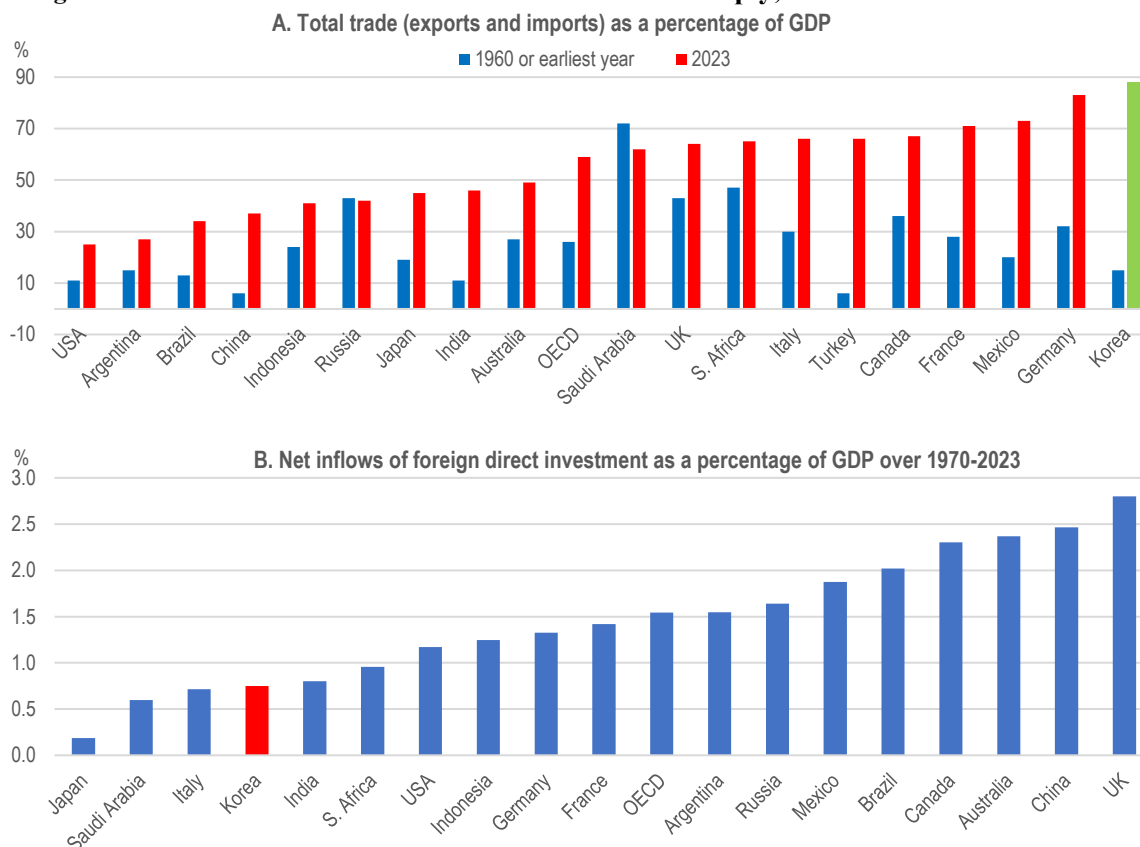
Korea’s exports and imports of goods and services jumped from 15% of GDP in 1960 to 106% in 2011 before falling back to 88% in 2023 (Figure 10, Panel A). Although Korea’s growth strategy is often described as “export-oriented”, it also led to a sharp rise in imports, which exceeded exports every year until the mid-1980s. The availability of imports at world-market prices was a prerequisite for export success and productivity gains. Its outward orientation produced many benefits: i) improved product quality as firms competed in international markets; ii) higher productivity through specialisation in areas of comparative advantage; iii) economies of scale through expanded production; and iv) increased foreign exchange earnings, which financed imports.

Figure 9. Korea's regulatory quality has improved significantly since the Asian financial crisis



Note: The Worldwide Governance Indicators (WGI) project constructs indicators of six broad dimensions of governance, including regulatory quality as shown above. WGI are based on 35 underlying existing data sources.
Source: World Bank, [World Development Indicators](#) | [DataBank](#).

Figure 10. Korea's international trade has increased sharply, but FDI inflows remain low



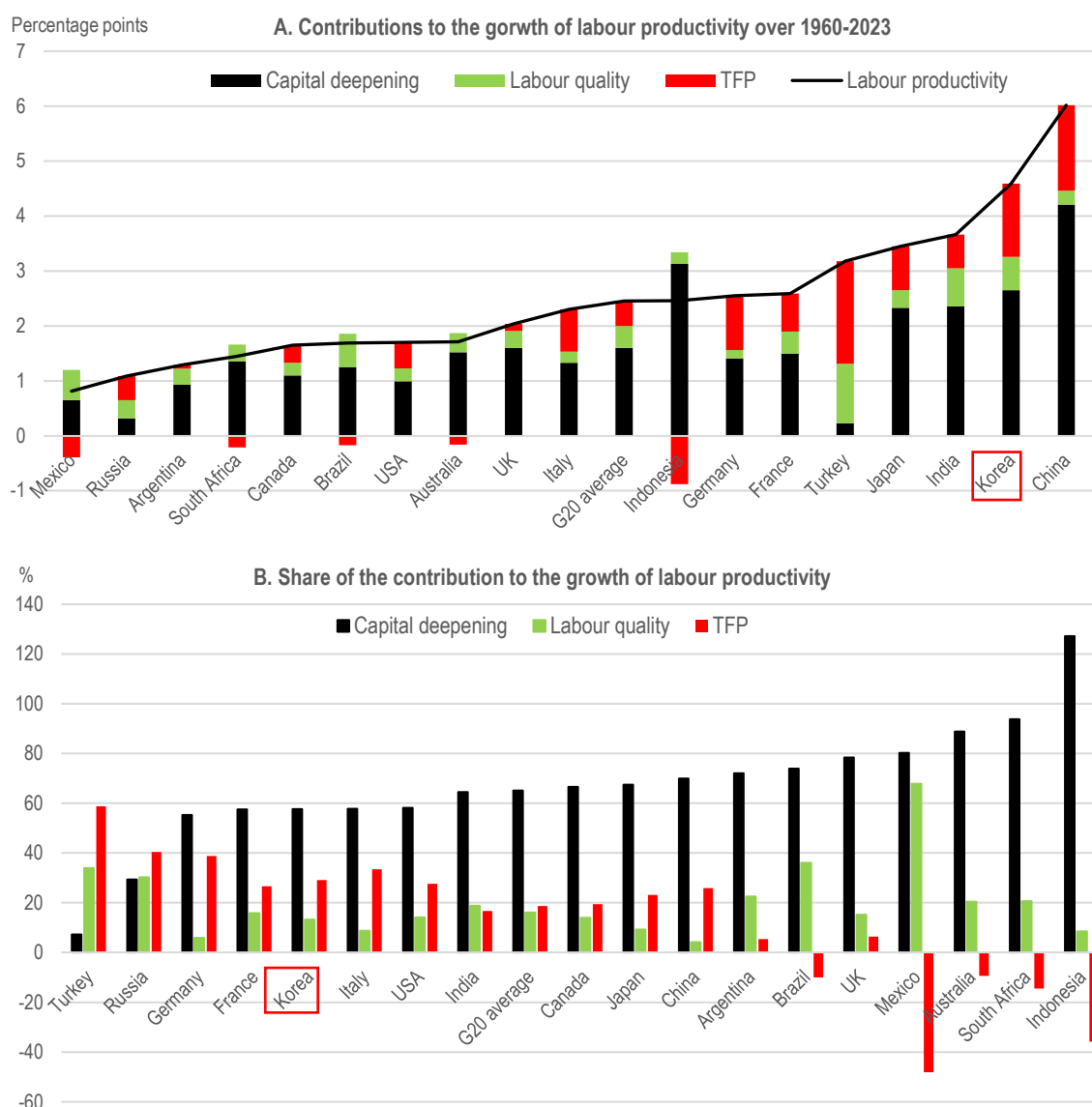
Note: The blue bar in Panel A shows Saudi Arabia in 1968), Germany, Italy, Japan, UK, US and the OECD area in 1970, and Russia in 1989; Panel B shows inflows for Germany beginning in 1971, China in 1979 and Russia in 1992.
Source: World Bank, [Trade \(% of GDP\)](#) | [Data](#) and [Foreign direct investment, net inflows \(% of GDP\)](#) | [Data](#), accessed 22 April 2025.

However, FDI inflows to Korea have been relatively modest compared to other G20 countries (Figure 10, Panel B). Indeed, the stock of inward FDI, which amounted to 15% of GDP in 2022, was the second lowest in the OECD area after Japan. The low level reflects Korea's barriers to FDI inflows (see below) and competition from China, which has attracted significant inflows.

The components of labour productivity growth in Korea stand out from other G20 countries

Labour productivity growth in Korea rose at an annual rate of 4.6% over 1960-2023, second only to China among G20 countries and nearly double the G20 average (Figure 11, Panel A). The percentage contributions are shown in (Panel B):

Figure 11. TFP growth played a relatively significant role in productivity gains in Korea



Note: Includes all G20 countries except Saudi Arabia due to lack of data. Labour productivity is defined as output per hour of labour input. Data on working hours are not available for Indonesia, India and Turkey from 1960-70, Russia from 1960-91 and South Africa from 1960-2000. Labour productivity based on output per number of employees is used for those periods. In Panel B, countries are ranked by the share of the contribution by capital deepening. Source: The Conference Board, *Total Economy Database*, April 2023.

- Capital deepening was the largest contributor in Korea, accounting for 58% of productivity growth. The G20 average was even higher at two-thirds, as capital deepening exceeded the contributions from labour quality and TFP in every country except Turkey and Russia.
- The contribution of TFP to labour productivity growth in Korea was one of the largest among G20 countries at 29%. Its contribution varied significantly across countries at different stages of development. It averaged 22% in the nine high-income G20 countries compared to only 4% for the nine emerging and developing G20 countries and was negative for four countries.
- Improvements in labour quality accounted for 16% of productivity growth in G20 countries. Its role differed, though, between the emerging and developing G20 countries, where its share averaged 27%, and the high-income G20 countries, where it was only half as large. In Korea, labour quality's contribution matched the high-income country average, reflecting Korea's relatively high literacy rate of 71% in 1960, aided by its phonetic writing system (*hangul*).

The impact of changing economic policies on productivity in Korea during the past 65 years

The government's economic policy direction has changed abruptly multiple times, with significant implications for productivity. After recovery from the separation of the Korean peninsula into North and South and the Korean War, President Park Chung-hee launched export-promotion policies in the 1960s. The export focus continued during the 1970s under the Heavy and Chemical Industry (HCI) drive, although universal support for exporters was replaced by policies targeting specific industries and firms. The sharp increase in government financing for favoured sectors led to high inflation and the economic crisis in 1979-80. Following the assassination of President Park, the new government pursued market-based reforms and macroeconomic stabilisation. This period was marked by the Korea's democratisation in 1987 and its accession to the OECD in 1996. The response to the 1997 Asian financial crisis and the 2008-09 Global Financial Crisis prompted further economic reform. The 2010s was a relatively stable period marked by slower growth as Korea achieved economic maturity. The links between changing economic policies and the productivity performance in each period is discussed below.

Recovery from the division of the Korean peninsula and the Korean War: 1954-62

Despite having one of the lowest per capita incomes in the world – less than in North Korea – real GDP grew at a modest annual rate of 4.1% during 1954-62. Labour productivity was essentially flat, as improved labour quality and capital deepening was nearly offset by negative TFP growth (Table 1). A 1963 World Bank study judged Korea to be a hopeless case due to the “intractable nature of Korea's basic economic weakness” (World Bank, 1963).

Table 1. Korea's economic performance by period

	GDP	GDP per capita	Labour productivity	Labour quality	TFP growth	Capital deepening
1954-62	4.1	1.3	0.3	1.0	-1.1	0.4
1962-73	10.6	8.1	6.0	1.0	1.6	3.3
1973-80	8.6	6.9	4.1	0.2	-0.3	4.0
1980-96	9.4	8.2	6.5	0.6	2.9	2.8
1996-2009	4.7	4.0	5.3	0.6	1.9	2.7
2009-23	2.9	2.6	2.6	0.3	0.6	1.6

Source: The Conference Board, *Total Economy Database*, April 2023; and World Bank, [Population, total - Korea, Rep. | Data](#) and [GDP growth \(annual %\) - Korea, Rep. | Data](#), accessed 21 May 2025.

Institutions and frameworks

The Korean War (1950–53) killed almost one million people and destroyed about two-thirds of Korea's productive capacity. Government policies focused primarily on meeting the immediate needs of the impoverished population rather than on pro-productivity policies (Sakong, 2010). The lack of fiscal resources limited the government's response. Indeed, US foreign aid amounted to nearly 8% of GNP between 1953 and 1962 and financed almost one-half of the government budget (Mason et al., 1980). Rapid money supply growth (Koh, 2010) led to inflation at an annual rate of 40% during 1952-57 (Table 2).

Accumulation of the factors of production

Private investment was deterred by severe financial repression. However, important pro-productivity reforms occurred in education and agriculture. When Korea was liberated from Japanese colonial rule in 1945, the primary school enrolment rate was only 45% and the literacy rate was 22%. Under President Syngman Rhee's plan to achieve universal primary education, enrolment and literacy rates had risen to 86% and 72%, respectively, by 1960 (Eichengreen et al., 2013). Increased literacy provided workers suitable to the labour-intensive industries of the 1960s. Land reform, in which the government bought farmland from landlords at forced prices and sold it to farmers at below-market rates, boosted incentives for agriculture production, which accounted for more than a third of GDP in 1961 and nearly two-thirds of employment (Kdevelopedia, 2012).

Technological and structural change

President Rhee's (1948–60) goal of a self-sufficient economy was reflected in Korea's import substitution strategy. Government policies tended to encourage zero-sum rent-seeking activities that misallocated resources and hindered productivity growth: i) non-competitive allocation of import quotas and licenses and government contracts for reconstruction; ii) the sale of former Japanese properties at below-market prices; iii) the selective allocation of foreign aid funds and materials; and iv) privileged access to cheap bank loans. Such policies also promoted the rapid growth of the nascent business groups (*chaebol*) (Jones and Sakong, 1980).

Markets and resource allocation

The repressed financial market discouraged savings, slowed the efficient allocation of resources, increased the segmentation of financial markets, and created financial disintermediation. The official lending rate by banks was capped at 20%, while the rate in the informal curb market rate was 150-240%. Real interest rates were negative, while the consumer price index surged more than five-fold during 1952-57 (Koh, 2010).

Internationalisation

The government used quantitative restrictions and high tariffs, ranging from 27.4% to 66.5% during the latter half of the 1950s, to promote import-substitution industrialisation. A complicated multiple exchange rate system kept the currency overvalued, discouraging exports, which amounted to only 3% of GNP in 1961 (Koh, 2010). The top five export items were iron ore, tungsten, silk, coal and squid (Table 3). Manufacturing accounted for about 10% of exports and 10% of GNP and three-quarters of the population lived in rural areas (OECD, 1994).

Outward-oriented strategy leading to Korea's economic take-off: 1962-1973

Poor economic results and the increasingly autocratic Rhee regime led to its overthrow in 1960. Park Chung-hee, who took power in 1961, shifted policy from import substitution to export promotion. Korea achieved double-digit economic growth during 1962-73 and per capita GDP rose at an 8.1% annual rate (Table 1). Labour productivity rose at a 6.0% annual rate, with large contributions from capital deepening, labour quality and TFP growth, as the focus on international competitiveness boosted efficiency.

Table 2. Economic policies that impacted Korea's productivity growth, 1954-80

	Post-war recovery: 1954-62	Outward-oriented growth: 1962-73	Heavy and chemical industry drive: 1973-80
Institutions and frameworks			
Institution building	The Rhee regime used government contracts, allocation of import licenses, etc. to consolidate power	The Economic Planning Board, an economic super ministry, and the National Tax Service were established	The National Conference for Unification was created to select the president, ending direct elections
Government capabilities	The democratically-elected Rhee Syngman became increasingly autocratic, leading to his overthrow	Development of a professional civil service with limited corruption by developing country standards	Pres. Park declared martial law and introduced the Yushin Constitution, reducing civil liberties
Macroeconomic policy	Rapid money supply growth led to inflation of 40% over 1952-57. Foreign aid financed half of public spending	Expansionary macroeconomic policy kept inflation at double-digit rates. The government budget recorded deficits	Inflation averaged 19% over 1973-80 while the government budget deficit averaged nearly 2% of GDP
Factor accumulation			
Investment	Investment was deterred by interest rates over 100% in the informal curb market	Major infrastructure investments included expanding the electricity supply and building major highways	Large-scale investments in HCLs led to high excess capacity, corporate debt, NPLs, and inflation
Education & skills	The primary school enrolment rate rose from 45% in 1945 to 72% in 1960, sharply boosting the literacy rate	With nearly universal primary school enrolment, the focus shifted to raising lower secondary school attendance	The secondary school enrollment rate doubled between 1970 and 1980
Resources	Agricultural land reform redistributed wealth and reduced income inequality between urban and rural areas	Development of coal production contributed to the reforestation of Korea	The "New Village Movement" invested in rural infrastructure and raised living standards, narrowing urban-rural gaps
Technological and structural change			
Innovation & technology	Universities operating in Korea during the colonial period closed when Korea was liberated	Creation of KIST in 1965 and KAIST in 1971 to promote science and technology	Public-sector R&D assisted HCLs by importing advanced technologies and disseminating the results
Industrial policy	Import substitution policies constrained productivity growth and the growth of Korea's international trade	Outward-oriented policies focused resources on firms and industries capable of exporting	Policies helped HCL firms boost their share of Korea's exports from 27% to 65% over 1972-81
Creative destruction	New firms were created as most Japanese-owned enterprises were converted to private ownership	Government policies supporting exporting firms hastened the development of large business groups	Government policies helping HCL firms and sectors further strengthened the large business groups (<i>chaebols</i>)
Markets and resource allocation			
Financial markets	Financial repression, with bank lending rates capped at 20%, led to negative real interest rates given high inflation	The nationalisation of commercial banks tightened government control of the financial system	Government control of banks allowed it to channel large amounts of funding to HCLs, leading to financial difficulties
Product markets	Korea's import substitution strategy limited access to foreign products	Exporting firms allowed free access to imports while goods competing with domestic producers faced high barriers	Uneven playing field for domestic firms and trade barriers constrained product markets
Labour markets	The Federation of Korean Trade Unions was formed in 1960, but dissolved in 1961	The government expanded statutory benefits and protection for workers, including annual paid leave	Under the 1973 Constitution, workers' rights to organise, bargain collectively and strike could be denied
Competition policy	Preferential treatment of certain entities, such as in allocating import quotas, led to resource misallocation	Allocation of credit to exporters based on economic performance raised productivity	Preferential treatment of HCLs came at the expense of firms in other sectors; price controls were tightened in 1973
Internationalisation			
Trade	A multiple exchange rate system kept the currency overvalued. High tariffs (27.4% to 66.5%) limited imports	Exports were promoted through lending and subsidies, lowering import barriers and exchange rate policy	Quantitative restrictions protecting the HCLs and agriculture kept the import liberalisation rate low at 55%
FDI	Foreign aid from the US and the UN accounted for 99.9% of capital inflows while FDI was essentially zero	Half of industrial sectors were closed and the rest faced foreign equity share limits and export requirements	FDI inflows during 1973-78 were three times higher than during 1966-72, accounting for 6% of capital inflows
Migration	Between 1945 and 1953, about 10% of the population left the North, but these numbers fell after the war ended	Korea's brain drain reversed due to concerted state efforts to repatriate scientists and engineers	Emigration from Korea exceeded immigration to Korea in the 1960s and 1970s
Inclusion	Land reform ended tenant farming. Expansion of education boosted the literacy rate	Rising exports of labour-intensive goods shifted labour from agriculture to higher-paying manufacturing jobs	The concentration of industrial plans in the southeast area of Korea during the HCL exacerbated regional inequality

Note: Policies with potentially anti-productivity effects are highlighted in yellow.

Source: Author's elaboration based on the format in van Ark et al., 2023.

Table 3. The composition of Korea's exports evolved rapidly during its high-growth era

Top five export products as a share of total exports

1961			1970		1975	
	Export	%	Export	%	Export	%
1	Iron ore	13.0	Textiles & garments	40.8	Textiles & garments	36.2
2	Tungsten	12.6	Plywood	11.0	Electronic products	8.9
3	Raw silk	6.7	Wigs	10.8	Steel products	4.6
4	Coal	5.8	Iron ore	5.9	Plywood	4.1
5	Squid	5.5	Electronic products	3.5	Footwear	3.8
1980			1985		1991	
	Export	%	Export	%	Export	%
1	Textiles & garments	28.6	Textiles & garments	23.1	Electronic products	28.0
2	Electronic products	11.4	Ships	16.6	Textiles & garments	21.5
3	Steel products	10.6	Electronic products	14.1	Steel products	6.3
4	Footwear	5.2	Steel products	8.5	Ships	5.7
5	Ships	3.5	Footwear	5.2	Footwear	5.3

Source: Sakong Il (1993).

Institutions and frameworks

Economic policy was directed by the Economic Planning Board (EPB), created in 1961 by combining the several bureaus in the Ministry of Construction with the Budget Bureau in the Ministry of Finance (KDI, 2016). Including the Budget Bureau gave the EPB the power to mobilise resources. The EPB quickly became a “super economic ministry” responsible for planning and budgets. It was directed by the Deputy Prime Minister and placed directly beneath the Prime Minister. It launched the first of seven five-year economic plans in 1962 (Kim and Jeong, 2017). Its export focus promoted productivity growth. The government also strengthened its control over the central bank, whose primary role was supplying money to satisfy the business sector's demand for credit. The government abolished the ceiling on the central bank rediscount facility in 1968, leading to rapid money supply growth (Koh, 2010), while the government's fiscal deficit remained large due to the growth-first policy. Expansionary fiscal and monetary policy contributed to an average inflation rate of 14% during 1962-73.

Accumulation of the factors of production

The focus on export promotion fuelled a rapid increase in investment, which tripled from 6% of GDP in 1962 to 19% in 1973, resulting in a significant contribution of 3.6 percentage points from capital deepening to labour productivity growth over this period (Table 1). Private investment was accompanied by public investment in infrastructure. Electric power development projects beginning in 1962 boosted the supply of electric power above demand in the mid-1960s. The construction of three major highways during 1968-73 supported productivity gains by easing transport congestion. The education system developed further with primary school enrolment rising from 89% in 1965 to 92% in 1970, while lower secondary school rose from 31% to 36% (Figure 12). In contrast, enrolment in upper secondary school and tertiary education was steady at lower levels. Investment in education, along with the mandatory military service for young men, provided labour skills necessary for the heavy and chemical industries developed in the 1970s.

The emphasis on exports and education, which promoted employment in labour-intensive manufacturing, positively impacted income equality. Moreover, the government expanded benefits for workers, including annual paid leave, severance payments and limits on working hours, despite restrictions on workers' rights. The Gini coefficient fell significantly during the 1960s (Sakong, 1993), as Korea was able to reconcile economic growth with a reduction in inequality (Eichengreen et al., 2013), in contrast to the usual pattern of rising income inequality during periods of initial economic development (Kuznets, 1955).

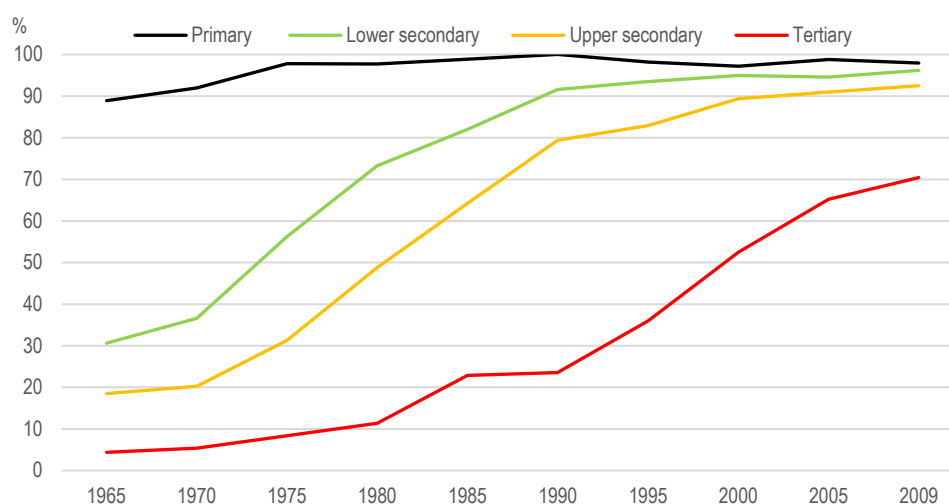
Technological and structural change

Export promotion also encouraged technological progress as firms had to meet higher quality standards to export. The government created a number of research institutions whose mission was to import advanced foreign technologies, which promoted productivity (Koh, 2010). The most important were the Korea Institute of Science and Technology in 1966 and the Korea Advanced Institute of Science and Technology in 1971.

Markets and resource allocation

Financial repression intensified as the government increased its control over the banking system to ensure that exporters had adequate investment funding. The banking system was nationalised in 1961 and various specialised banks, such as the Industrial Bank of Korea, were established. The negative impact on resource allocation was limited by the priority given to successful exporting firms. Moreover, the export-led expansion encouraged the reallocation of resources from less to more productive sectors, notably the massive migration of agricultural workers to higher productivity jobs in manufacturing and services.

Figure 12. Education enrolment rates have risen sharply in Korea



Note: The enrolment rate equals the number of enrolled school-age students divided by the school age population, which is 6-11 for primary school, 12-14 for lower secondary, 15-17 for upper secondary and 18-21 for tertiary education, which includes all post-secondary education in colleges and universities.

Source: Koh et al. (2010).

Internationalisation

As noted above, export promotion was the primary goal of economic policy in the 1960s. Major policy measures included abolishing multiple exchange rates in 1963 and the devaluation of the won by 50% in 1964. To prevent real appreciation of the won and maintain export competitiveness, a sliding-peg system of exchange rate adjustment was introduced. Various incentives were created to channel resources into export-oriented activities. The state-controlled banking system used export performance as the criterion of credit worthiness and provided loans for exporters at preferential rates. The government supported exporters through direct cash payments, permission to retain foreign exchange earnings to purchase imports, and exemption from virtually all import controls and tariffs. Profits earned from exports were taxed at half of the standard corporate tax rate (OECD, 1994). These incentives were available to all firms with good export performance regardless of their business sector (Sakong, 2010; Eichengreen et al., 2013). The government, in consultation with the business sector, set export targets for industries and individual firms and gave awards to successful exporters.

These policies contributed to exports rising at a 35% annual rate during 1961-73, though from a very low base, boosting them to 24% of GDP. In addition, the composition of exports shifted from raw materials to manufactured products. In 1970, the largest export category was textiles, followed by plywood, wigs, iron ore and electronics (Table 3). The major export markets were the United States (47% of the total in 1970) and Japan (28%). Trade also encouraged the establishment of manufacturing plants large enough to achieve economies of scale while also promoting the growth of the large business groups. Consequently, TFP growth, which had been negative in the 1950s, made a significant contribution of 1.6 percentage points (Table 1) to productivity growth. In 1973, the manufacturing sector output surpassed agriculture.

In contrast to the central role of international trade, FDI accounted for less than 1% of capital formation in Korea during 1962-71 and less than 5% of capital inflows. Half of Korea's industrial sectors were closed to FDI until 1980. Even in the open sectors, FDI was curbed by export requirements and foreign equity share limits (OECD, 1994), reflecting fears of foreign control over the Korean economy (Kim and Hwang, 2000).

Heavy and chemical industry drive: 1973-80

At the end of 1972, President Park declared martial law and introduced the Yushin Constitution. During the 1973 New Year's press conference, he announced the Heavy and Chemical Industry (HCI) drive to promote six strategic industries: steel, nonferrous metal, machinery, shipbuilding, electronics, and chemical engineering. Output growth during the HCI drive slowed to 8.6%, while labour productivity growth dropped to 4.1% (Table 1). Capital deepening contributed 4.0 percentage points to labour productivity growth – the largest of the six periods identified in this paper – while TFP growth made a negative contribution. Korea's performance during this period has been described as “growth with inefficiency” (NBER, 2021).

Institutions and frameworks

Under the HCI drive, the share of Heavy and Chemical Industries (HCIs) in industrial production was to be raised from 35% to 51% between 1972 and 1981, and their share in total exports from 27% to 65% while boosting total annual exports to over USD 10 billion by the early 1980s. The shift away from general export to targeting specific industries reflected two primary concerns. First, the government wanted to maintain Korea's lead over other “newly industrialising countries” by upgrading its industrial structure. Second, it wanted to strengthen Korea's self-defence capacity in the face of North Korea's military provocations and prepare for the possibility of a reduced US military presence in Korea (Koh, 2010). The government believed that large-scale, risky investments in the HCIs required state leadership (OECD, 1994).

The HCI drive created severe macroeconomic imbalances. Excess demand and a high level of lending by the central bank to the business sector resulted in the money supply rising at an annual rate of 35% during 1974-80. Meanwhile, the fiscal deficit averaged around 3% of GDP. Macroeconomic policy, combined with the first and second oil shocks, pushed inflation up to an annual rate of 19%.

Accumulation of the factors of production

Investment nearly doubled from 17% of GDP in 1972 to 33% in 1979, with business investment, which was concentrated in the HCIs, accounting for about half of the total. The average rate of capital formation in the HCIs, which had risen at the same rate as light industry in the 1960s, was nearly twice as high during the HCI drive. Second, secondary education developed rapidly during this period. Lower secondary school enrolment doubled from 36.6% in 1970 to 73.3% in 1980 and from 20.3% to 48.3% for upper secondary school (Figure 12).

Another important pro-productivity policy was the “New Village Movement”, launched in 1971 to modernise rural areas and limit the growing disparity in income levels with urban centres. It relied on citizen participation and community efforts using materials provided by the government. The Movement built rural infrastructure, such as irrigation systems, roads and electricity supply, which boosted productivity. It further improved living standards, for example, by replacing thatched roofs with tiles and providing telephone services. The Movement stressed the principles of self-help, self-reliance and co-operation (Joh et al.,

2010). The absolute poverty rate in rural areas fell from 36% in 1965 to 11% in 1979, aided by the outflow of rural workers to new opportunities in the manufacturing sector (Park, 2009).

Technological and structural change

The HCI drive mobilised numerous policy instruments:

- The government's control of the financial system enabled it to channel a large amount of loans at low interest rates to HCIs and share the investment risk with private firms. In manufacturing, the debt-to-equity ratio soared from 100% in the mid-1960s to between 300% and 400% during the 1970s (Koh, 2010). The share of bank loans to the chemical, metals and equipment industries rose from one-third of total lending to the industrial sector in 1973–74 to about 60% by the end of the decade, driven by the increase in “policy loans” (Jones, 2024).
- Government incentives encouraged private investors to participate in state-backed projects, and state-owned enterprises were established in key sectors, such as steel.
- Imports that competed with the HCIs were restricted.
- The Industrial Complex Development Corporation used its power to appropriate land to establish 29 industrial parks covering 332 km², concentrated in Gyeongsang Province (Joh et al., 2010).
- The tax system discriminated between industries during the HCI drive. The marginal effective tax rate for the HCI sector was 30-35 percentage points less than that for other industries.
- Public-sector R&D was also used to assist HCIs by importing advanced technologies and disseminating the results. While total R&D spending remained below 0.5% of GDP in the 1970s, the government share increased to 50-70% (Koh, 2010).

Markets and resource allocation

The HCI drive distorted resource allocation. Government control of banks allowed it to channel large-scale funding to HCIs, leading to financial difficulties for some banks and corporations. The *chaebols*' role expanded as the government used them to accomplish key objectives, resulting in a rise in the concentration of market shares (Kim et al., 2021). Companies affiliated with the business groups enjoyed advantages unavailable to independent firms, but such support went hand in hand with government control and guidance (Jones, 2024). Such preferential treatment came at the expense of firms in other sectors. The use of price controls during the 1970s failed to control inflation. Instead, they boosted inflationary expectations, enlarged the black market and amplified inflationary pressures as firms shifted sales to overseas markets.

Internationalisation

Exports increased at a 25.6% average pace during the HCI, surpassing the USD 10 billion target in 1980. Although the targets for the HCI's share of exports were not achieved, several HCIs saw significant increases. While textiles remained the largest export item at 28.6%, it was followed by electronic products (11.4%) and steel products (10.6%) (Table 3). However, the trend toward trade liberalisation during the 1960s stalled in the 1970s, in part to protect HCIs. Indeed, the average tariff rate remained above 40%. In addition, quantitative restrictions remained high; the import liberalisation ratio (the share of freely-imported items divided by the total number of import items) remained around 55%, compared to above 90% in Japan and Taiwan (Koh, 2010). FDI inflows during 1973-78 were three times higher than during 1966-72, although still accounting for only 6% of capital inflows (Eichengreen et al., 2013). FDI inflows can boost productivity through the diffusion of ideas, supplying advanced technology and managerial expertise, achieving economies of scale and facilitating integration in global value chains.

Market-based reforms, the democratisation of Korea and its accession to the OECD: 1980-96

The HCI drive came to an abrupt end as exports declined in 1979 for the first time since the early 1960s. Output growth turned negative in 1980 and inflation peaked at 29% (Koh, 2010). The HCI drive ended with

the assassination of President Park, ending 18 years of rule. Lt-Gen. Chun Doo-hwan seized power in a military coup in 1980. Despite continued authoritarian rule, the Fifth Republic was a period of productivity, market-based economic reform and liberalisation (Table 4). The economic results were positive; GDP growth rebounded to an annual rate of 9.4% during 1980-96 and per capita GDP growth matched the rate achieved during Korea's take-off during 1962-73 (Table 1). Labour productivity growth, at a 6.5% rate, was the highest during the six periods considered in this paper. Economic reforms contributed to a 2.9 percentage-point contribution from TFP to labour productivity growth, exceeding the contribution from capital deepening.

Institutions and frameworks

President Chun's decision in 1987 to make retired Gen. Roh Tae-woo his successor triggered the June Democracy Movement. Faced with growing opposition, Roh proposed a new, more democratic constitution and popular election of the president. Roh was elected, making it Korea's first democratic transition of power, and launching the Sixth Republic, which continues today. The final Five-Year Plan (1992-96) set a target of becoming a member of the OECD. The invitation in 1996 to become the 29th member of the OECD demonstrated that Korea had become an important member of the global community.

Political stability and the government's economic stabilisation programme to reduce inflation and fiscal imbalances laid the foundation for productivity growth. The government made a fundamental policy shift by emphasising price stability over economic growth (Koh et al., 2010). To cut inflation, the government reduced money supply growth and public expenditures, in part by reducing support for money-losing HCIs. Preferential credit and tax concessions were scaled back to limit credit expansion and fiscal deficits (Sakong, 2010). Such policies lowered the average inflation rate to 6.4% during the 1980s and it has remained in single digits ever since. Consolidated central government spending fell from 23.0% of GDP in 1981 to an average of 16.5% during 1985-90, reflecting reduced support for HCIs (Koh, 2010).

Accumulation of the factors of production

Despite the stabilisation policies, investment increased further, from 30% of GDP in 1980 to an all-time high of 42% in 1996 on the eve of the Asian Financial Crisis (Figure 5), with the business sector accounting for two-thirds. However, this worsened the 1997 crisis (see below). Steps to open the capital account led to overseas borrowing that funded part of the investment. At the same time, Korea invested heavily in human capital to provide the skills necessary for a shift to a knowledge-based economy. The tertiary enrolment rate surged, more than tripling to 36% by 1995 (Figure 12), with an emphasis on STEM subjects.

Technological and structural change

With the end of the HCI drive, government intervention became more functional and less industry and firm-specific. Preferential credit from the government and the central bank and tax concessions to HCIs were scaled back to limit credit expansion and lower the budget deficit. The 1992-96 Five-Year Plan called for reduced government guidance and control of the economy, recognising that the growing complexity of the economy and political democratisation had made government interference less effective and more costly. The more neutral and transparent policies improved resource allocation and favoured productivity growth. With a more level playing field, economic growth was led by consumer electronics and semiconductors – industries that had not been targeted under the HCI drive (OECD, 1994).

Impressive gains in science, technology and education contributed to productivity gains. R&D jumped from 0.5% of GDP in 1980 to 2.2% in 1996. The World Bank termed this the last stage of a “3i” strategy that Korea epitomised: i) accelerating fixed investment; ii) infusion of technology by importing technology from abroad and diffusing it domestically; and iii) innovation using through domestic R&D. Private R&D expenditures increased by an unprecedented 26 times from 1980 to 1990 and exceeded 80% of total R&D spending by the end of the 1990s (World Bank, 2024).

Table 4. Economic policies that impacted Korea's productivity growth, 1980-2023

	Market-based reforms and democratisation: 1980-96	Coping with crisis: 1996-2009	Facing slower growth and economic maturity: 2009-23
Institutions and frameworks			
Institution building	The Korea Fair Trade Commission was established in 1981 and became an independent agency in 1994	Four separate agencies supervising various financial institutions were unified in the FSC in 1998	Korea created a 2050 Carbon Neutrality and Green Growth Commission and neutrality scenarios
Government capabilities	Korea's democratisation in 1987 led to more transparent and improved policy-making	Korea abandoned its 5-year economic plans and was admitted to the OECD, a group of high-income economies	Pres. Park moved 36 ministries and public institutions outside of Seoul to reduce regional inequality
Macroeconomic policy	Restrictive macroeconomic policies slowed the pace of inflation and reduced fiscal deficits	In contrast to tight macro policies in the 1997 crisis, expansionary policies softened the impact of the 2008 crisis	Government debt remains below 5% of GDP; inflation averaged 2.1% during 2009-24
Factor accumulation			
Investment	Investment reached a record high of 42% of GDP in 1996, financed in part by foreign loans	Business investment fell from 28% in 1996 to a 21% average in the 2000s, reflecting more attention to risks	Business investment stayed around 21% during 2009-23, as firms had to keep debt-equity ratios below 200%
Education & skills	The tertiary enrolment rate more than tripled over 1980-95 to 35%, preparing for a knowledge-based economy.	Tertiary enrolment doubled to 70% by 2009, further contributing to Korea's shift to high-tech products	Secondary vocational education was improved by creating Meister schools and the Work Learning Dual System
Resources	Korea's pollution problem worsened due to rapid industrialisation and increased vehicle usage	Pres. Lee declared "Low Carbon, Green Growth" as a new national vision for the nation's development	Korea established an ETS in 2015, but its role is limited as only 10% of the permits are auctioned during 2021-25
Technological and structural change			
Innovation & technology	R&D spending jumped from 0.5% of GDP in 1980 to 2.2% in 1996, led by business R&D expenditures	Despite economic crises, R&D outlays continued to rise, increasing from 2.2% of GDP in 1996 to 3.2% in 2009	While R&D is high, the share financed by foreigners was 0.3% and higher education performed only 9% of R&D
Industrial policy	Government intervention became more functional and less industry-specific, making it more neutral	The collapse of Daewoo, the 2 nd -largest <i>chaebol</i> , in 1999, weakened the "too-big to fail" assumption	Pres. Park's programme of fostering a "creative economy" was followed by Pres. Moon's "income-led growth"
Creative destruction	Bailing out HCL firms strengthened the government-private sector risk partnership, worsening the 1997 crisis	By end-1999, 14 of the 30 top <i>chaebols</i> in 1997 had gone bankrupt or entered workout programmes	To avoid supporting non-viable SMEs, the government introduced a graduation scheme for support
Markets and resource allocation			
Financial markets	The opening of the financial market without appropriate supervision made the 1997 crisis more severe	Prompt measures helped overcome the 1997 crisis, while reforms led to a more market-based economy	Steps were taken to improve the KOSDAQ stock market for SMEs, but KONEX only had one listing in 2024
Product markets	Import liberalisation and the end of price controls boosted product-market competition	A private-sector group developed a "Code of Best Practices" in corporate governance but it is not mandatory	The government launched regulatory reforms such as the Regulatory Guillotine and Thorn under the Nail
Labour markets	Labour law reform led to a surge in the number of unions and a temporary jump in the number of strikes	Labour market flexibility was enhanced by allowing firms to lay off workers for "urgent managerial needs" in 1998	The high level of employment protection in Korea maintained labour market duality
Competition policy	1981 Monopoly Regulation and Fair Trade Act (Korea's first competition law) replaced general price controls	The 1998 "Big Deals" pushed the <i>chaebols</i> to swap affiliates, though this had a negative effect on competition	Reduced barriers to imports and FDI and regulatory reform strengthened competition
Internationalisation			
Trade	The average statutory tariff fell from 34.4% to 9.8% during 1981-95, while quantitative restrictions declined	Korea negotiated its first FTA with Chile in 2004, followed by FTAs with EFTA, ASEAN and India	Korea now has 21 FTAs covering 59 countries, including the US and the EU
FDI	The relaxation of FDI regulations in the mid-1980s contributed to a rise in inflows to USD 5.7 billion over 1986-92	The FIPA reduced the number of business lines closed to FDI and simplified procedures for FDI inflows	FDI inflows fell to 0.8% of GDP during 2009-23, reflecting Korea's complicated regulatory framework
Migration	The government allowed foreign "trainees" to work in SMEs in the manufacturing sector for up to 2 years	The 2004 Employment Permit System allows foreigners to work up to three years in SME firms in manufacturing	Skilled workers accounted for 12% of foreign nationals with work visas, reflecting stringent visa regulations
Inclusion	Rapid and broad-based growth created a large middle class, which demanded democracy	With the sharp rise in unemployment, the unemployment insurance coverage and vocational training were expanded	Korea's public social spending rose from 8% of GDP in 2009 to 15% in 2022, in part due to population ageing

Note: Policies with potentially anti-productivity effects are highlighted in yellow.

Source: Author's elaboration based on the format in van Ark et al., 2023.

Markets and resource allocation

Domestic financial liberalisation proceeded slowly in the 1980s and early 1990s. More commercial banks were privatised in the early 1980s, although the government continued to intervene by appointing bank managers and directing asset management. Gradual interest rate liberalisation and the opening of financial markets led to greater internationalisation of financial markets in the 1990s (see below). At the same time, the government expanded credit programmes for small and medium-sized enterprises (SMEs). The minimum share of SMEs in banks' lending portfolio was raised in 1980, and this regulation was extended to non-bank financial institutions (NBFIs) in 1985.

Korea's first competition law, the Monopoly Regulation and Fair Trade Act (MRFTA), was implemented in 1980. This led to the abolishment of general price controls in 1994, though controls on certain products remained in effect. The Korea Fair Trade Commission (KFTC) was established in 1981 within the EPB and became an independent organisation in 1994. The MRFTA was assigned the usual competition policy tasks, such as banning the abuse of market-dominant positions, anticompetitive M&As, unfair business practices, restraints on competition by trade associations and resale price maintenance (Koh, 2010). However, the slow progress in deregulation and the privatisation of state-owned enterprises (SOEs) severely limited the pro-productivity impact of competition policy (Yoo, 1997).

In addition to traditional competition policies, the KFTC is responsible for monitoring the large business groups, some of which include more than 100 affiliated companies. The *chaebols*, such as Samsung and Hyundai, have played a key role in Korea's rapid economic growth while creating a number of concerns: i) the "octopus-like" expansion of *chaebols* into a wide range of unrelated businesses reduces opportunities for entrepreneurs and start-ups; ii) their large market concentration weakens competition; iii) the concentration of control in the founding families, which usually own less than 5% of the *chaebol*; iv) unfair treatment of subcontractors; and v) political corruption related to *chaebols* (Jones, 2018).

The government adopted many policies, even before the KFTC, to control the *chaebols* (Jones, 2018):

- Since 1979, the "SME-only Industry Designation System" has prohibited big firms from operating in industries identified as most appropriate for SMEs, reducing competition and productivity.
- In 1987, the government prohibited cross-shareholding between affiliates in the same group and the creation of holding companies, put a ceiling on equity investment by firms in sister companies and restricted the voting rights of their affiliated financial and insurance companies.
- The 1991 "specialisation policy" encouraged the business groups to concentrate on core activities by exempting them from regulations in those business lines.

Faced with labour shortages in SMEs, the government launched an "industrial technology training system" in 1993 to allow foreign workers in SMEs in manufacturing for up to two years. The liberalisation of labour laws in 1986-87 partially eased workers' rights to organise and helped reduce the number of labour disputes. However, the adversarial legacy in labour-management relations remains problematic (Koh, 2010).

Internationalisation

Import liberalisation advanced rapidly in the 1980s, especially after Korea recorded its first ever current account surplus in 1986. The average statutory tariff declined from 34.4% to 9.8% between 1981 and 1995, while the share of imports not subject to quantitative restrictions rose from 60.7% to 92.0%. The primary objective of reducing trade barriers was to enhance the productivity of domestic firms by exposing them to international competition (Koh, 2010). By the mid-1990s, Korea's level of import liberalisation was comparable to that in the OECD area (OECD, 1994), despite high protection for agriculture. The establishment of diplomatic relations with China in 1992 opened the door to bilateral trade. By 2003, China had become Korea's top trading partner.

Some barriers to FDI were relaxed in the mid-1980s, contributing to a three-fold jump in inflows from 0.14% of GDP during 1973-80 to 0.36% during 1980-96. However, in 1992, Korea still had restrictions on 89% of the items in the OECD code for capital account liberalisation, compared to the 17% OECD average (OECD, 1994). During 1994-96, merchant banks launched foreign operations, while domestic banks opened 28 overseas branches. Total external liabilities rose at a 27% annual rate during 1992-96 as an investment boom led to strong demand for low-cost capital, with a pro-productivity impact. However, most were short-term loans, given strict regulations on long-term borrowing, setting the stage for the 1997 crisis.

Despite reforms during 1980-96, Korea remained vulnerable to the 1997 Asian Financial Crisis

Given the government's responsibility for the problems of the companies that participated in the HCI drive, it felt obligated to initiate restructuring during the 1980s to cope with overcapacity and worsening profitability in some sectors. More importantly, it aimed to prevent an economic crisis triggered by problems in the corporate and banking sectors. These measures included investment coordination, tax benefits and the provision of rescue packages, including loans from state-owned banks. The Manufacturing Development Act in 1985 allowed the government to promote the rationalisation of troubled industries by regulating market entry and investment. However, such policies limited competition and productivity growth and encouraged the further expansion of the *chaebols* (Koh, 2010). Moreover, its policies strengthened the risk partnership between the private sector and the government. The government's success in avoiding an immediate crisis had larger long-term costs: "The intervention succeeded in averting a crisis in the short term by propping up failed companies, but hampered long-term stability by dodging painful restructuring and increasing moral hazard in the corporate and banking sector" (Koh, 2010). If insolvent companies had been allowed to fail during the 1980s, the amount of corporate debt and non-performing loans held by banks would have been much smaller, reducing the impact of the 1997 crisis.

Coping with crises: 1996-2009

Despite its rapid development, Korea was not immune to the 1997 Asian Financial Crisis that began in Southeast Asia. A lack of appropriate supervision of the risks associated with foreign borrowing was a major trigger of the crisis in Korea: "The mismatch between foreign currency assets and liabilities posed a grave threat not only to individual financial institutions but also to the whole economy" (Koh, 2010). Short-term foreign debt far exceeded foreign exchange reserves, which were nearly exhausted by November 1997. As foreign lenders refused to roll over existing loans, Korea received a record USD 57 billion in emergency assistance from the International Monetary Fund (IMF) in early December. Nevertheless, the exchange rate plummeted from around 1,150 won per USD to almost 2,000 won at the end of December, while the three-year corporate bond rate soared from around 14% to almost 30% in the wake of capital flight (Jones, 2024).

Although Korea rebounded strongly in 1999-2000 from the crisis, real GDP growth slowed to a 5.2% annual rate during 2000-07 before the 2008 Global Financial Crisis. The domestic banking system had again accumulated large external debts and could not roll over its foreign loans. Although the financial sector was generally sound and had little direct exposure to the subprime loan problems, Korea's output fell sharply in late 2008 when world trade plummeted. Korea again faced large outflows of foreign capital, resulting in a 41% plunge in the stock market during 2008 and won depreciation. The positive impact of the pro-productivity post-1997 reforms helped Korea to get through the 2008 crisis without a sharp drop in output. Nevertheless, real GDP growth fell to a 4.7% annual rate during 1996-2009 and TFP growth to below 2%.

Institutions and frameworks

The financial crisis brought a fundamental reform of financial supervision. Before the 1997 crisis, financial supervision was carried out in the Ministry of Finance and Economy by four separate agencies responsible for banks, securities companies, insurance firms and merchant banks. With the establishment of the Financial Services Commission (FSC) in April 1998, the four agencies were unified into the Financial Supervisory Service (FSS), the FSC's executive body. In addition, the Bank of Korea Act was revised to

enhance the central bank's independence, establish an inflation-target framework and limit the Bank of Korea's objectives to price stability (OECD, 1999).

The macroeconomic responses to the 1997 and 2008 crises diverged. In 1997, the government initially cut spending and raised taxes in a misguided attempt to balance the budget, a policy that was later reversed as the severity of the downturn became evident. On top of fiscal tightening, the Bank of Korea (BoK) raised its policy rate to as high as 30% in an attempt to reverse the won's depreciation. The impact of such high rates on a highly leveraged economy was devastating. In contrast, an effective macroeconomic policy response shortened and mitigated the impact of the 2008 crisis. The BoK cut its policy rate to a then-record low of 2% and the government increased its spending by 14% in 2008, in part for temporary public-sector jobs. In addition, the reforms adopted in the wake of the 1997 crisis reduced the vulnerability of the corporate and financial sectors to shocks (Jones, 2024).

Accumulation of the factors of production

Business investment fell from a peak of 28% in 1996 to an average of 21% during the 2000s (Figure 5), reflecting the introduction of a 200% limit on firms' debt-to-equity ratio and companies placing greater emphasis on productivity and profitability. Nevertheless, capital deepening still accounted for half of productivity growth during 1996-2009. The tertiary enrolment doubled from 35% in 1995 to 70% by 2009 (Figure 12), further contributing to Korea's shift to high-tech production. However, the emphasis on higher education led to a labour shortage in manufacturing SMEs and a low employment rate for young adults. The Employment Permit System (EPS) was created in 2004 to reduce labour shortages. It allowed workers from 15 Asian countries to work up to three years in SMEs, but did not allow permanent residency. In the 2000s, the annual number of foreign workers allowed to enter Korea was usually below 50,000 (Kim, 2015).

Technological and structural change

The government-business sector relationship was altered by the collapse of Daewoo, the second-largest conglomerate, in 1999. By the end of 1999, the stock market had lost almost one-half of its capitalisation, and 14 of the 30 biggest *chaebols* in 1997 had gone bankrupt or entered workout programmes. Although this intense episode of creative destruction increased financial turbulence, it helped weaken the moral hazard resulting from the "too big to fail" assumption, *i.e.*, that the government would save companies from their own mistakes (OECD, 2000). The number of *chaebol*-affiliated firms declined by one-third over 1997–2000, as the groups closed, merged or sold affiliates to raise cash. Nevertheless, R&D outlays continued to rise, increasing from 2.2% of GDP in 1996 to 3.2% in 2009. Korea became a front-runner in green growth in 2008 as President Lee Myung-bak declared "Low Carbon, Green Growth" as a new vision for national development and created the Presidential Committee on Green Growth in 2009.

Markets and resource allocation

In the wake of the 1997 crisis, Korea faced two serious financial-sector challenges. First, the immediate crisis was a chain of bankruptcies in non-financial companies had severe repercussions on the financial sector. Indeed, non-performing loans (NPLs) accounted for 22% of financial credit to the corporate sector. Many non-viable financial institutions were closed down or merged and the number of banks was cut in half (Koh, 2010). The government used the Korea Asset Management Corporation (KAMCO) to purchase and restructure NPLs and the Korea Deposit Insurance Corporation (KDIC) to recapitalise viable financial institutions and boost their capital ratios. Second, Korea had to shift from a financial system with a high level of state guidance to a market-based system. The approval of 15 major pieces of legislation in late 1997 transformed the institutional and regulatory basis of the financial system, bringing it closer to OECD norms and laying the foundation for better resource allocation and productivity growth. The reforms allowed the creation of institutions offering a wide range of financial services, improving the governance framework for financial institutions and authorizing the introduction of new products (OECD, 1999).

To improve the corporate sector and product markets, a private-sector committee devised a “Code of Best Practices” in 1999 that drew on OECD principles for corporate governance. The Code included measures to improve the rights of small shareholders, expanded the use of independent directors and gave them specific responsibilities (such as audit and appointment committees), and strengthened audit procedures (OECD, 2000). A 2003 amendment required listed firms to have at least three outside directors and at least half the positions on the board should be filled by outside directors (Min, 2011). The privatisation programme reduced the number of SOEs from 98 to 35 and their employment by 62% (Koh, 2010).

The KFTC implemented more regulations to control the large business groups. It required them to disclose large-scale intra-group transactions (1998), prepare combined financial statements (1999) and divulge important matters related to their non-listed companies (2005). New debt guarantees between *chaebol* subsidiaries were banned in 1998 and existing guarantees had to be eliminated by 2000. However, the 1998 “Big Deals”, in which the *chaebols* were encouraged to specialise by swapping affiliates, proved less successful (Jones, 2018). To promote corporate restructuring in the wake of the crisis, the government enhanced labour market flexibility by allowing firms to lay off workers for “urgent managerial needs” in 1998 and permitting dispatched workers in 26 occupations. Nevertheless, conditions for dismissing permanent workers remain quite stringent compared to other OECD countries. These reforms were accompanied by an expansion of employment insurance coverage and vocational training (OECD, 1999).

Internationalisation

Product market competition was enhanced by the reduction of trade barriers and the elimination of the Import Diversification Plan, which barred some imports from Japan. With an average tariff of less than 8% in 1999, the main obstacle to trade was non-tariff barriers, which in some cases resulted from regulation. The 1998 regulatory reform drive was an important pro-productivity policy, eliminating half of the existing regulations. Korea negotiated its first free trade agreement (FTA) with Chile in 2004, followed by agreements with Singapore (2006), the European Free Trade Association (2006) and ASEAN (2007).

The 1998 Foreign Investment Promotion Act (FIPA), which established the principle of national treatment of FDI inflows, was one of the most important pro-productivity reforms adopted in the wake of the 1997 crisis. FIPA also cut the number of business lines closed to FDI from 27 to seven and the number of partially closed business lines from 26 to 17. FIPA also streamlined and simplified the administrative procedures facing foreign investors, reducing the number of regulatory procedures from four to two. The government established the Korea Investment Service Centre as a one-stop service for foreign investors and appointed an FDI ombudsman in 1999. The FIPA also expanded the scope and generosity of incentives to attract foreign investors, and their duration of was lengthened from eight to ten years (OECD, 1999). FDI inflows jumped from 0.35% of GDP during 1980-96 to 1.2% during 1996-2009, led by a surge in 1998-2000.

Facing slower growth and economic maturity: 2009-23

President Lee Myung-bak campaigned on a promise of “747” – 7% GDP growth, raising per capita GDP to USD 40,000, and making Korea the world's seventh-largest economy. The subsequent administrations of Park Geun-hye 2013-17 and Moon Jae-in 2017-22 also tried various strategies to raise growth toward past levels. However, real GDP growth during 2009-23 fell below 3%, in part due to slower labour force growth (Table 1). Labour productivity also decelerated, falling to 2.6% – half of the level during 1996-2009 – reflecting shrinking contributions from TFP, capital deepening and the quality of labour.

Institutions and frameworks

Korea effectively used macroeconomic policies to maintain stability. Fiscal and monetary policies during the COVID-19 pandemic limited the GDP decline to 0.7%, compared to the 3.9% drop in the OECD area. Despite rising social spending and the impact of the pandemic, Korea's gross government debt in 2023 was 56% of GDP, unchanged from 2010 and only half of the OECD average. Despite higher inflation related to the pandemic, inflation during 2010-24 was 2.1%, close to the central bank's 2.0% target. Korea established

an emissions trading system in 2015 to reduce greenhouse gas emissions. It has contributed to a decline in air pollution since 2019, which should also improve health and productivity.

Accumulation of the factors of production

Business investment remained steady at 21% of GDP during 2009-23, while the education system underwent significant reforms. The advancement rate of secondary school graduates to tertiary education reached 84%. President Lee warned of an “over-education problem” and an Education Minister complained of an “education bubble”. The high share of tertiary graduates reduced the return on education. Moreover, the focus on higher education led to credentialism and “education inflation”, which requires job candidates to obtain higher degrees for positions that formerly had lower requirements. The focus on entry to high-ranked university led to labour market mismatch and relatively low employment and a high rate of NEETs (not in employment, education and training) among university graduates. The emphasis on university education also diminished the role of secondary vocational education and training. To address these issues, the government launched two significant pro-productivity reforms (Jones and Beom, 2022).

- In 2010, the government introduced Meister secondary schools, based on the German model of combining education and work experience, to improve vocational education. Their curriculum is developed jointly with industry representatives, and internships are mandatory.
- In 2014, the authorities established the Work Learning Dual System, which enabled secondary students to pursue internships while attending school.

Technological and structural change

President Park (2013-17) launched a new growth strategy that aimed to foster a “creative economy”. The plan focused on two low-productivity sectors – SMEs and start-ups and the service sector. While the strategy identified key weaknesses to productivity growth and appropriate countermeasures, implementing fundamental reforms is challenging for presidents during their single five-year term (OECD, 2014). Improving the performance of SMEs and the service sector remains fundamental to Korea’s productivity challenge (see below). The Moon administration (2017-22) aimed to achieve “income-led growth” driven by job creation, driven by the public sector through increased public employment and higher household income by raising the minimum wage and social spending (OECD, 2018).

Markets and resource allocation

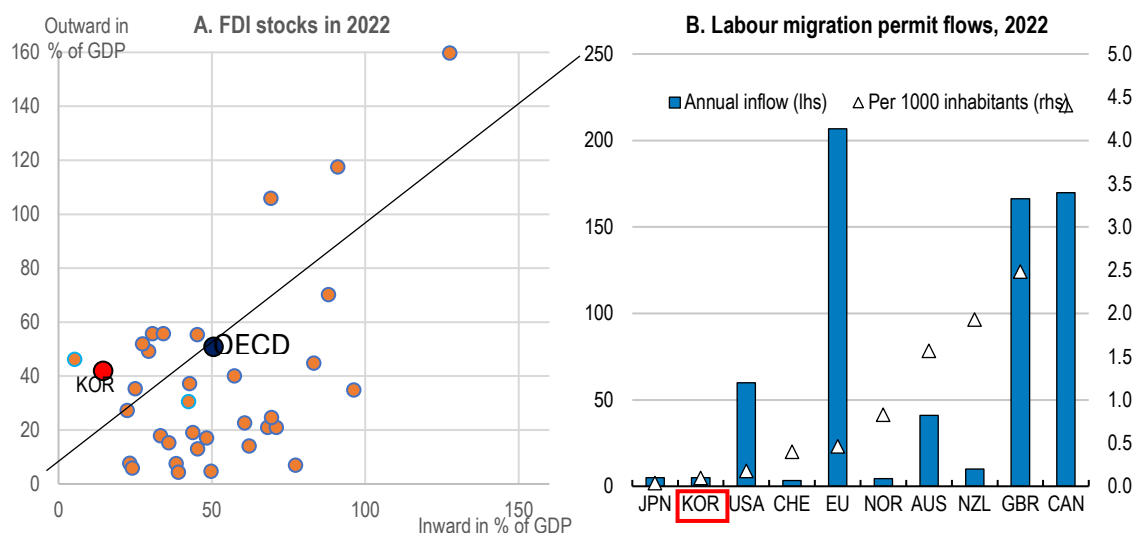
Product market competition was strengthened by numerous regulatory reform measures introduced during the Park administration during 2014-16 (Jones and Lee, 2016):

- The Regulatory Reform Ministerial Meeting, chaired by the President, began in 2014.
- The government launched a “cost-in, cost-out”, a type of regulatory budget, similar to the approach in the United Kingdom. Any new regulation that is expected to impose a direct incremental net cost on business must be offset by measures that provide savings that are at least equal to that amount.
- The Regulatory Guillotine solicits reform ideas from major business organisations.
- The Thorn under the Nails initiative aims to address chronic regulatory problems that are burdensome to small firms.
- The Regulatory Reform Sinmungo allows citizens to propose regulatory reforms directly.
- A change in regulatory reform principles: The government is expanding the sunset rule, moving from ex ante to ex post regulation and reviewing all economic regulations from a zero base. In addition, Korea is shifting from a positive-list regulatory system, which specifies which activities are allowed, to a negative-list approach, which identifies the prohibited activities.

Internationalisation

Korea now has 21 FTAs, covering 59 countries that account for over three-quarters of global output. Key agreements include those with the European Union (2011), the United States (2012) and the Regional Comprehensive Economic Partnership (2022), which includes the 10 ASEAN countries, plus China, Japan, Australia and New Zealand. Korea is one of only two countries (in addition to Canada) with comprehensive FTAs with both the EU and the United States. The Korea-USA FTA eliminated 95% of each nation's tariffs on goods over five years. In 2021, Korea announced it would seek to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), one of the world's largest FTAs. In 2015, Korea and China implemented an FTA, which is the most comprehensive agreement signed by China. However, with many exemptions and a 20-year transition period, the China-Korea FTA is far from best practice. FDI inflows fell from 1.2% of GDP from 1996-2009 to 0.8% during 2009-23, despite further government efforts to encourage FDI. Foreign investors experience challenges from Korea's complicated, opaque, and country-specific regulatory framework (US Department of State, 2024). The stock of inward FDI in Korea was 16.6% in 2022 (Figure 13, Panel A), the second lowest among OECD countries.

Figure 13. The stock of inward FDI and skilled labour inflows are low



Note: For Korea, workers with E-1, E-3-5 and E-7 visas.

Source: Panel A; OECD Data Explorer, “FDI Main Aggregates, BMD4,” accessed 27 August 2024; Panel B, OECD (2024).

The share of Korea's foreign-born population rose from around 1% in 2010 to 4% in 2022, still far below the 14% in the United States, the United Kingdom and the OECD average. The number of foreign workers has risen, primarily due to the EPS which raised its quota on foreign workers, to 185,000 in 2024. Foreign workers share of the labour force is currently around 3.5%, primarily low-skilled. Skilled workers account for only 2.6% of total foreign residents and 12% of foreign nationals with work visas. More than a third of skilled foreign workers are foreign language teachers and only half stay in Korea more than five years. The inflows of skilled foreign workers is only around 5,000 per year (0.1% per 1,000 inhabitants), well below other advanced economies, except Japan (Figure 13, Panel B). The main obstacle is stringent visa regulations that complicate entry and residency procedures (OECD, 2024).

Key lessons from Korea's high productivity growth and rapid economic development

Getting the fundamentals right

Korea's transformation beginning in the 1960s was not an “economic miracle” but instead the result of great sacrifice, effort and leadership. It provides important lessons in economic development. Annual

average GDP growth remained between 8.6% and 10.6% (6.9% to 8.2% in per capita terms) as economic policies veered during 1962-96 from general export promotion, the HCI drive and economic reforms. Korea's growth performance suggests that underlying factors, rather than changing industrial policy regimes, were primarily responsible for rapid growth. Investing in education and skills, adopting outward-oriented policies, ensuring macroeconomic stability, encouraging business investment, and developing rural areas and limiting income inequality were the building blocks of success. Interventionist policies to promote specific industries through subsidies and import protection have been used in many developing countries, typically with disappointing results. The negative impact of such policies in Korea was mitigated by the priority attached to exports, which provided discipline over government intervention. In sum, getting the fundamentals right was the foundation of Korea's rapid economic development.

Avoiding inefficient growth: Was the HCI drive a positive factor for Korea's long-term development?

The impact of the HCI drive remains controversial nearly half a century after its end. Some argue that it successfully created a dynamic comparative advantage (Koh, 2010). According to this view, the HCI, by creating industrial structures and upgrading the export mix, enabled Korea to take advantage of the "three lows" – low oil prices, low international interest rates and low US dollar and yen exchange rates – during the mid-1980s. One study estimated that without the HCI drive, welfare in 2009 would have been 3-4% lower (Choi and Levchenko, 2024). In addition, the HCI imposed an "impersonal and performance-based reward mechanism that served as a motor for economic growth" (Eichengreen et al., 2013).

A recent study using confidential data from Statistics Korea (Kim et al., 2021) found that output, input use and labour productivity increased significantly faster in industries targeted during the HCI drive than in non-targeted industries. However, it did not boost the TFP of targeted industries because resource allocation within those industries worsened. In other words, the HCI drive led to a concentration of production activities in the targeted industries, but not necessarily in the plants with the highest productivity. If the degree of misallocation in the targeted plants relative to the non-targeted plants had remained the same during 1968-80, their average TFP would have been 40% higher in 1980. Another study, covering the period 1963-83, found that "government industrial policies, such as subsidised credit and tax incentives, were not correlated with the growth of TFP in the promoted industries" (Lee, 1995). In addition, the excess capacity and worsening profitability of the HCIs during the 1980s required restructuring efforts that extended the distortionary impact of the HCI drive. The HCI drive had a long-lasting impact: subsidised firms grew faster than those never subsidised during the 30 years after the subsidies ended (Choi and Levchenko, 2024) and promoted the dynamic comparative advantage of directly targeted industries (Lane, 2025).

The labour productivity growth slowdown during 1973-80 and its composition suggests that the HCI drive was a period of economic growth with inefficiency. As noted above, TFP growth was negative, the only time that occurred during the six periods shown in Table 1, except for the immediate post-war phase. Many HCIs faced excess capacity and low profitability. Severe imbalances emerged, as the concentration of resources in HCIs created an unlevel playing field that limited the still-important labour-intensive industrial sector. One landmark study found that "Practically all forms of industrial policy had either negative or insignificant impacts on Korean productivity growth". It also found a negative relationship between trade protection and productivity growth in Korea. In particular, higher tariffs have a statistically significant negative impact on TFP (Lawrence and Weinstein, 1999). Given weak TFP growth in other fast-growing Asian economies, some argue that their rapid economic development in the postwar era has been driven primarily by capital and labour inputs (Krugman, 1994).

Why did Korea's productivity growth not return to the pre-1997 rate despite economic reforms?

As noted above, Korea's economic growth rate did not achieve its pre-crisis levels following the 1997 Asian Financial Crisis. Indeed, the 9.4% annual GDP growth rate during 1980-96 halved to 4.7% during 1996-2009 and slowed further to 2.9% during 2009-23, in part due to slower growth of labour inputs (Table 1).

Similarly, productivity growth slowed significantly from 6.5% during 1980-96 to 5.3% and 2.6% in the subsequent periods. Several hypotheses have been offered (Eichengreen et al., 2013):

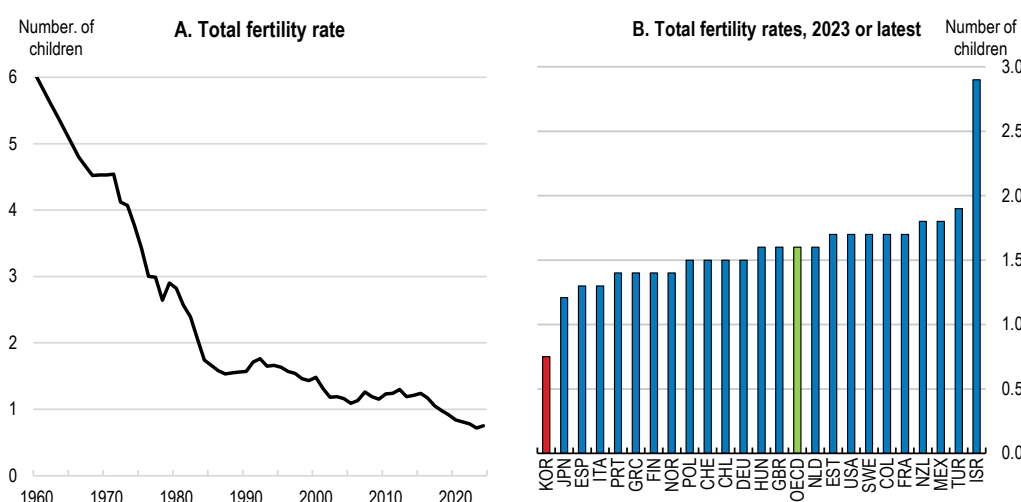
- The failure to achieve pre-1997 output and productivity growth rates reflects the failure to implement adequately the planned economic reforms.
- Fully realising the potential benefits of reforms takes an extended time period as the behaviour of economic agents changes slowly.
- The reforms implemented in the wake of the 1997 crisis did not go far enough.
- The less favourable international environment for trade and FDI has particularly affected trade-dependent economies such as Korea.

While there is some truth in each of these explanations, the key reason is that Korea's rapid convergence toward high-income countries has reduced its growth potential. The "convergence theory" (Barro and Sala-i-Martin, 1995) is supported by multivariate growth regressions in which the coefficient on current income per capita in a given country is negative and significant. As noted above, Korea's per capita income matched the OECD average by 2020 (Figure 1). The "catch-up factor" enabled Korea to accomplish in a relatively short time span the growth process that took much longer in the industrialised countries of Europe and North America (Pilat, 1994). During its early development, Korea could achieve rapid output and productivity growth by shifting labour from agriculture to manufacturing and services and by importing foreign technology. As these easy gains were exhausted, growth slowed. Rather than simply shifting workers to manufacturing and services, Korea had to improve productivity in manufacturing and services and generate technology rather than just importing it. Korea's transition to a slower-growth, mature economy was delayed by its economic boom leading up to the 1997 crisis (Eichengreen et al., 2013).

Headwinds facing Korea: population ageing and decline and falling returns on factor accumulation

Demographic factors also make it difficult for Korea to reverse the decline in its trend growth rate. Its total fertility rate edged up from 0.72 children per woman in 2023 to 0.75 in 2024, ending a stretch of eight consecutive annual declines (Figure 14, Panel A). Nevertheless, it is still the lowest in the world (Panel B). A fertility rate of 0.75 means that for every 200 people in the current parent generation, there will be only 75 children and 28 grandchildren. With the population already falling since 2021, kindergartens are being turned into nursing homes and wedding halls into funeral parlors.

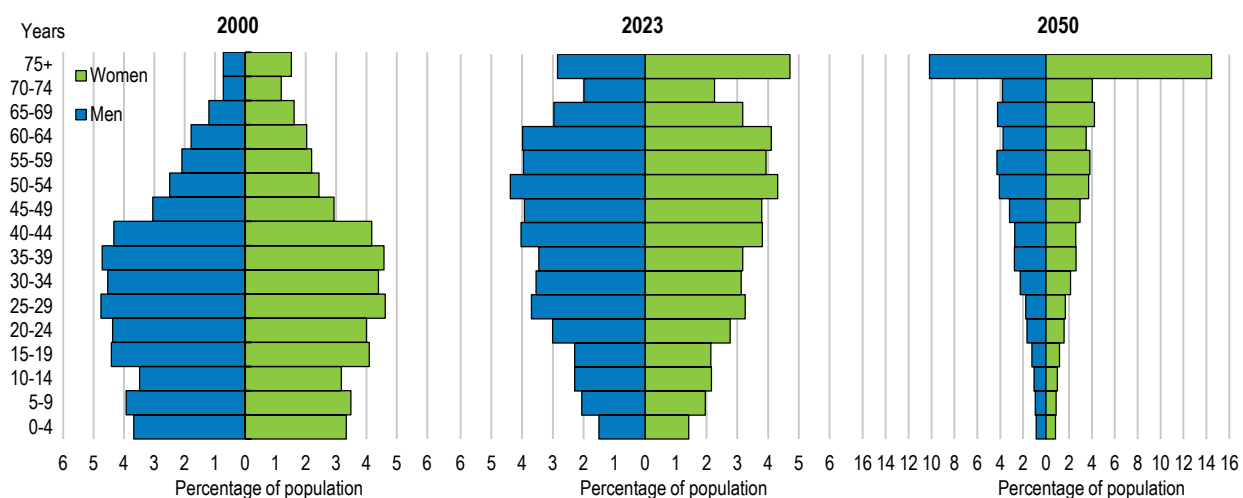
Figure 14. Korea's declining fertility rate is now the lowest in the world



Note: 2024 for Korea.
Source: OECD (2024).

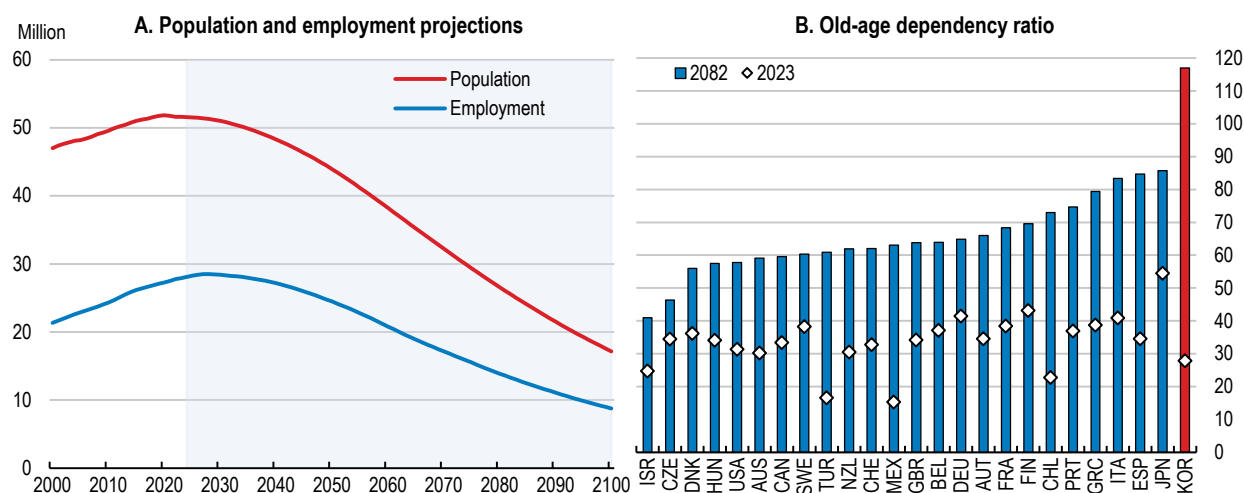
The population's age distribution is changing rapidly as baby boomers reach retirement and working-age cohorts shrink in size. Korea's population pyramid has morphed into a rectangle and is expected to become an upside-down pyramid by mid-century (Figure 15). Despite rising labour force participation rates for women and older persons, labour input growth is projected to slow during the coming decade and turn negative in the latter half of the 2030s (OECD, 2024). Assuming an unchanged fertility rate of close to 0.7 and constant net immigration of 30,000 per year, Korea's population would drop by two-thirds from 51.8 million in 2020 to 17.2 million by the end of the century (Figure 16, Panel A). The labour force would also drop by two-thirds to 8.8 million, assuming that employment rates remain constant for each gender and five-year age cohort.

Figures 15. Korea's population pyramid is being turned upside down



Source: OECD (2024).

Figure 16. Korea's population and employment are set to fall while the share of elderly rises



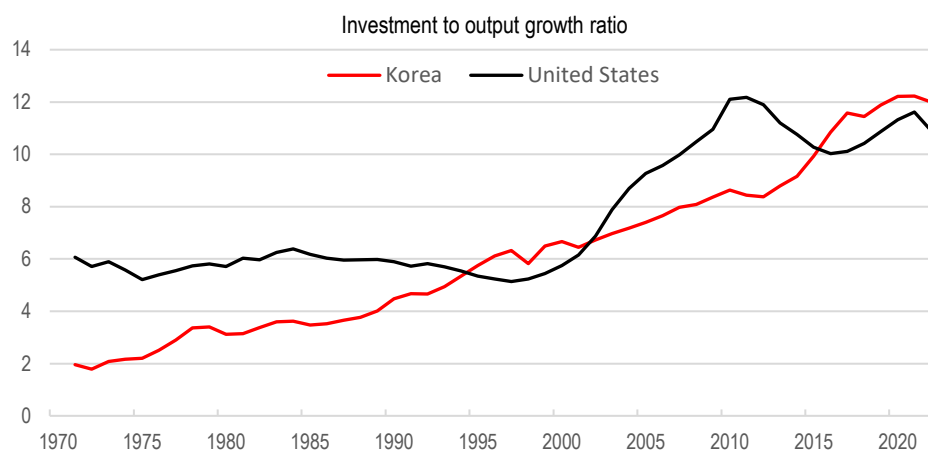
Note: Panels A assumes that the total fertility rate (0.7), net immigration inflows (30,000 per year), and employment rates by gender and five-year age cohorts each remain constant at current levels. In Panel B, the old-age dependency ratio is defined as the ratio of individuals aged 65 and over to those aged 20 to 64. It assumes that the total fertility rate in all countries eventually converges to 1.85 children per woman, the medium-variant forecast in the United Nations' *World Population Prospects 2022*.

Source: OECD (2024).

In this scenario, the old-age dependency ratio – the ratio of individuals aged 65 and over to those aged 20 to 64 – would rise from 28% in 2023 (3.6 persons of working age per elderly person) to 155% (0.6 persons) in 2082. Even if the total fertility rate were to rise to 1.85 children per woman, the elderly dependency ratio would still rise to 117% (0.85 persons of working age per elderly person) (Figure 16, Panel B). Korea is an outlier in terms of the speed of ageing. The share of elderly in its population rose from 7% to 20% in just 25 years, compared to 154 years in France and 96 years in the United Kingdom (Jones, 2022). The rising share of elderly puts downward pressure on per capita GDP growth. Moreover, an increasing share of elderly in the workforce has a negative impact on labour productivity (Maesta et al., 2022).

Declining returns from factor accumulation also make reversing the slowdown in labour productivity difficult. In 1970, Korea’s “incremental capital ratio” – the ratio of investment to output – was very low, reflecting the small capital stock in the early stages of its high growth era (Figure 17). In other words, a small increase in investment generated a large amount of output growth, indicating high capital productivity. As noted above, capital deepening accounted for 58% of Korea’s labour productivity growth during 1960-2023 (Figure 11). However, its contribution peaked at four percentage points during the HCI drive and fell to 1.6 points during the past 15 years (Table 1). In 2016, Korea’s incremental capital ratio surpassed the US ratio as its capital productivity declined. In addition, the return on human capital also fell as Korea’s “over-education problem” emerged. Its contribution to labour productivity slowed from one percentage point during 1962-73 to 0.3 points during the past 15 years. Further investment in education is unlikely to significantly boost productivity, though reforms to reduce labour market mismatch may have a positive effect.

Figure 17. Korea’s incremental capital output ratio has increased, indicating lower productivity



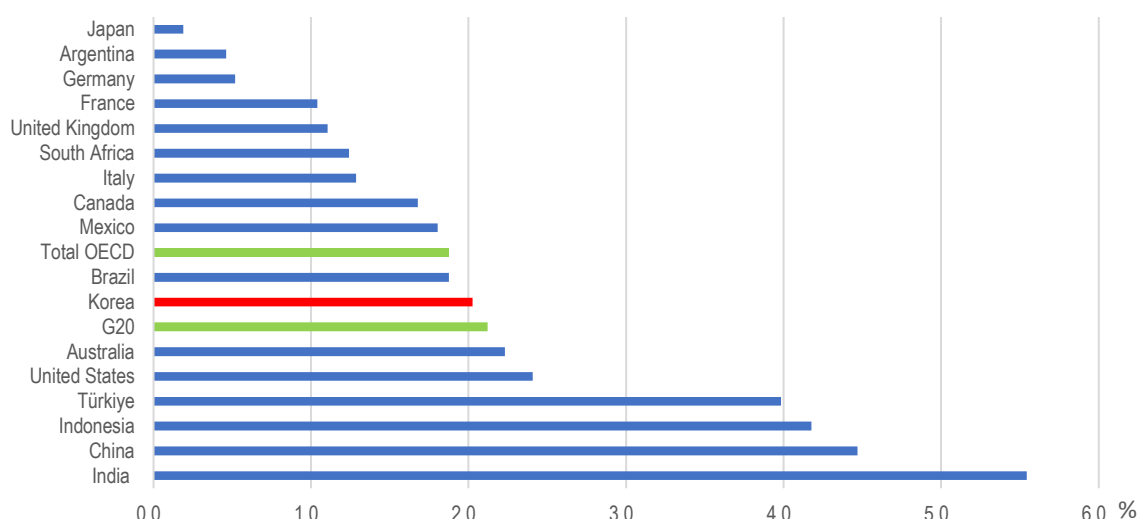
Source: OECD (2024).

Policy priorities to support productivity growth

As noted above, Korea’s per capita GDP caught up with the OECD average in 2020 (Figure 1). However, by 2023, it was around seven percentage points below the OECD average. Korea’s per capita GDP relative to the United States fell by a similar amount during that period, suggesting at least a temporary pause in Korea’s catch-up phase. In 2023, Korea’s per capita GDP was about two-thirds of that in the United States. Nevertheless, given Korea’s extensive investment in human capital, fixed capital and infrastructure, it seems reasonable to expect Korea to eventually match income and productivity levels in the highest-income countries (Eichengreen et al., 2013). However, recent potential growth estimates by the OECD do not suggest further convergence with the highest-income countries (Figure 18). Potential growth for Korea, which was 3.0% in 2016, is estimated to be 2.0% in 2025 (matching the BoK estimate). KDI estimates that

potential growth will fall close to zero in the 2040s and may turn negative (KDI, 2025). The pessimistic outlook partially reflects Korea's adverse demographic trends and declining returns on factor accumulation.

Figure 18. Korea's potential growth rate in 2025 is close to the OECD and G20 averages



Note: The OECD estimates of potential growth do not include Russia and Saudi Arabia.

Source: OECD (December 2024), [OECD Economic Outlook Statistical Annex](#) | [OECD](#).

Re-igniting convergence towards the highest-income countries depends heavily on labour productivity. With the impact of additional factor inputs declining, TFP growth is crucial to productivity gains. TFP can be increased through three interrelated channels (André and Gal, 2024):

- Innovation: firms at the productivity frontier developing new technology.
- Diffusion: non-frontier firms adopting new technologies and working practices that enable them to catch up with the productivity levels of frontier firms.
- Reallocation of resources between sectors and firms at different productivity levels: this is accomplished through firm entry and exit and reallocation of labour and capital.

The remainder of this section focuses on improving Korea's innovation system and promoting the diffusion of new technologies and the reallocation of resources by breaking down the polarisation of the economy.

Improving the innovation system

As noted above, Korea has the second-highest level of R&D among OECD countries, driven by investment by large firms, with a relatively large going to ICT (Figure 8). It is also a leader in the number of patents registered in the fastest-growing digital technologies and in the share of young people with tertiary education. Leveraging this investment to accelerate productivity growth requires addressing weaknesses in the innovation system. Links between the business sector, universities and government research institutes (GRIs) are underdeveloped. For example, 97.7% of the R&D financed by the business sector in 2021 was performed in the business sector, compared to only 1.7% at universities and 0.8% at GRIs (Table 5).

The concept of research universities is relatively recent in Korea, which has only a few institutions capable of meeting the knowledge demands of world-leading companies, competing with top international academic institutions and generating start-ups and spin-offs (Jones, 2024a). Universities' R&D capabilities could be strengthened by promoting their autonomy and enhancing their evaluation and assessment systems (OECD, 2023). Korea ranked ninth globally in science and engineering articles, but its share slipped from 2.6% in

2012 to 2.3% in 2022 (Jones, 2024b). A more significant university role in R&D would also enhance basic research, which is the key to breakthrough innovations. In Korea, only about 20% of basic research occurs in universities, compared to 50% to 75% in other countries (Jones and Lee, 2016).

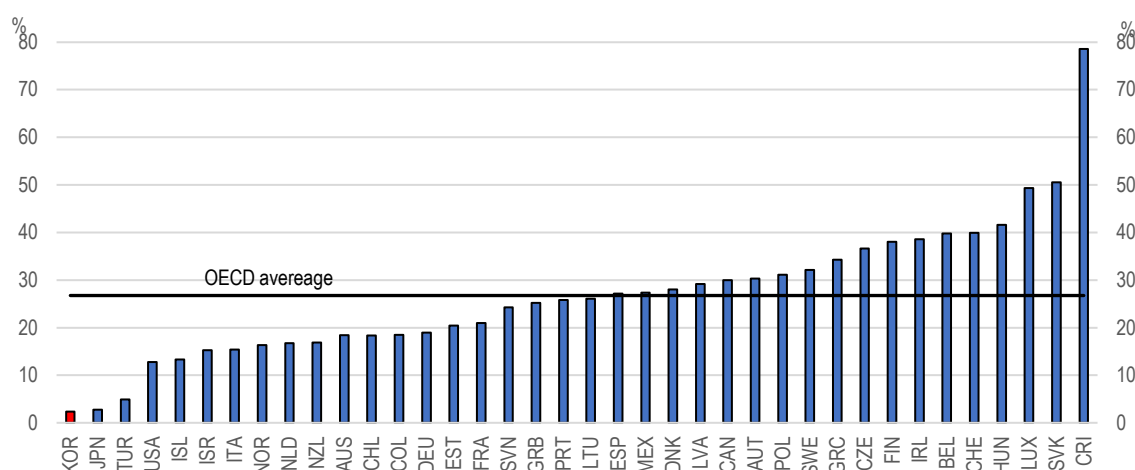
Table 5. Korean R&D by source of funding and sector performing the R&D

Source of funds	Share of funding	The division of funding by the sector performing the R&D				
		Business	Government	Higher education	Non-profit sector	Total
Business	76.1	97.7	0.3	1.7	0.3	100.0
Government	22.8	20.0	41.5	31.9	6.7	100.0
Higher education	0.6	4.8	1.0	93.7	0.5	100.0
Foreign	0.3	51.2	3.7	21.0	24.1	100.0
Non-profit sector	0.2	8.2	19.4	28.2	44.1	100.0
Total	100.0					

Source: OECD.Stat, [Gross domestic expenditure on R&D by sector of performance and source of funds \(oecd.org\)](https://data.oecd.org/gdp/gross-domestic-expenditure-on-research-and-development-by-sector-of-performance-and-source-of-funds), accessed 17 April 2024.

In addition, the Korean innovation system needs to be better integrated into international innovation networks, which would stimulate the flow of ideas. Foreign funding accounted for only 0.3% of R&D investment in Korea in 2021 (Table 5) compared to 6.7% in the United States. This contributes to the low share of international co-operation in patents: only 2.4% of Korean patents included foreign co-inventor(s) in 2021, the lowest in the OECD (Figure 19). A variety of strategies could strengthen international linkages: i) facilitating the international mobility of researchers and innovators; ii) increasing internationalisation in recruitment and the allocation of R&D funds; iii) creating incentives for researchers to participate in international collaboration, as Korea has a low number of international co-publications compared to other OECD countries; and iv) expanding foreign direct investment (OECD, 2023).

Figure 19. The share of Korean patents with foreign co-inventor(s) is very low (2021)



Source: OECD.Stat, [International co-operation in patents \(oecd.org\)](https://data.oecd.org/patents/international-co-operation-in-patents), accessed April 18, 2024.

Breaking down the polarisation of the economy

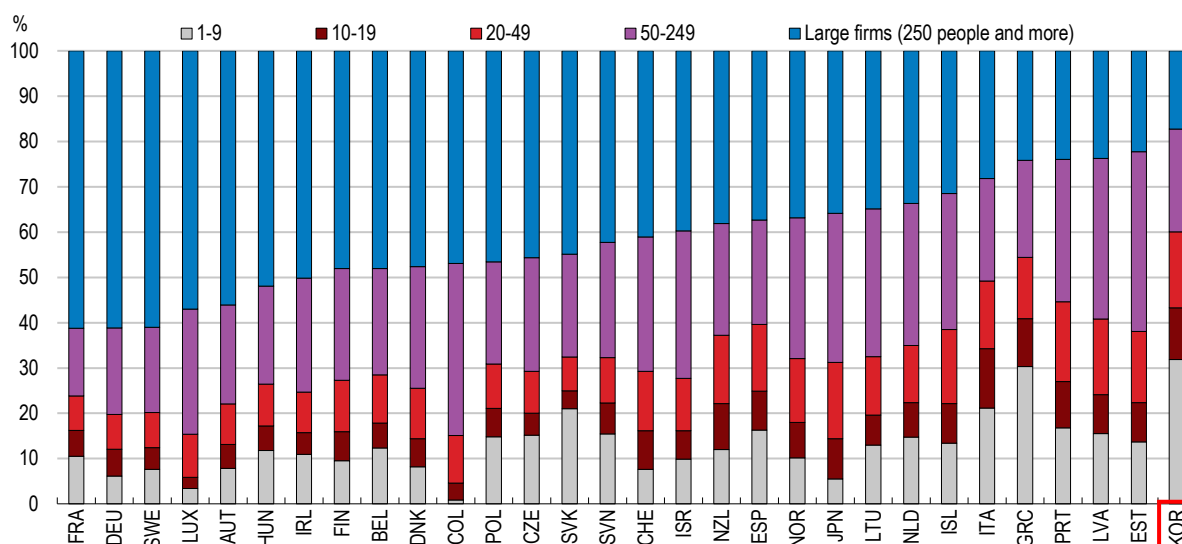
Economic polarisation – between large companies and SMEs and between manufacturing and services – is in part a legacy of Korea's export-led development strategy, which depended on large manufacturing

companies. This section considers the duality in the business sector, as well as labour market dualism, which has a major impact on productivity and TFP growth. It concludes with climate change issues.

Large companies and small and medium-sized enterprises

SMEs accounted for 83% of employment in 2020, the highest in the OECD (Figure 20). The large share reflects in part the relatively young age at which workers leave their career jobs and use their retirement allowance to set up a business. The average retirement age from the main career was 52.7 years in 2023, as seniority-based wage system prompts firms to impose “honorary retirement” for older workers (OECD, 2024).

Figure 20. The share of employment in SMEs in Korea is the highest among OECD countries



Note: In 2020 (2017 for Colombia and 2019 for Israel). For Korea, firms with 50-299 employees are included in SMEs, while those with 300 or more are classified as large firms.

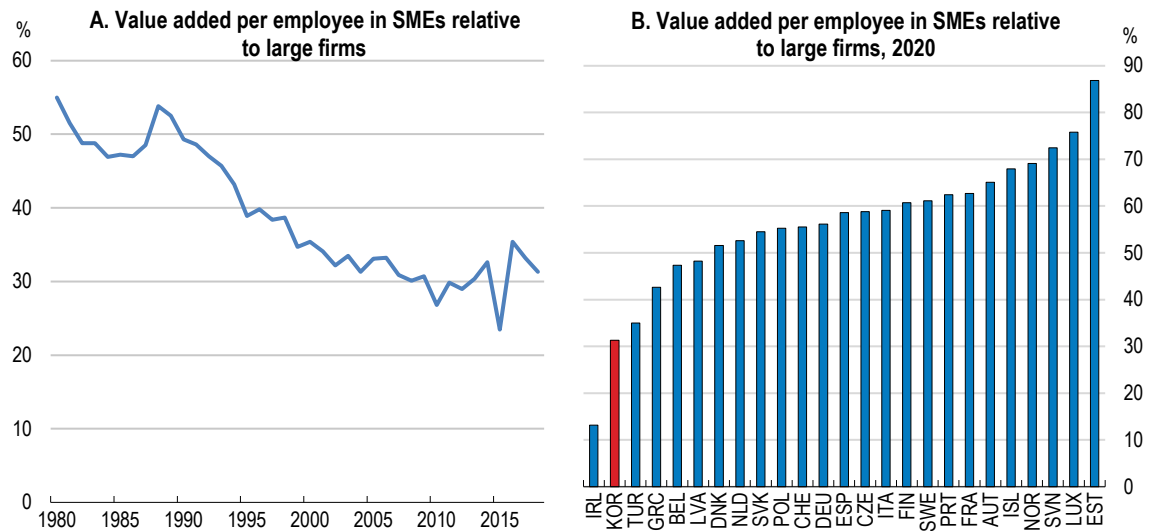
Source: OECD (2024).

Labour productivity in SMEs in manufacturing declined from 55% of that in large firms in 1980 to 31% in 2018 (Figure 21). The dominance of large companies is the legacy of support and protection to the large business groups discussed above. According to the KFTC, the combined sales of the top 30 business groups in 2023 amounted to 76.9% of GDP. The sales of the top four *chaebols* – Samsung, SK, Hyundai Motor and LG – alone were equivalent to 40.8% of GDP. However, the “trickle-down effect” to the rest of the economy has weakened as the *chaebols* have become increasingly internationalised and have shifted their product mix to more capital and technology-intensive products. The top 30 business groups accounted for only about 5% of employment in 2024. Boosting SME productivity requires measures addressing the large business groups and the SMEs themselves.

While the large business groups continue to be a key source of exports and economic growth, they create a number of risks and problems:

- **Large-scale diversification:** The so-called “octopus-style” diversification (Ministry of Strategy and Finance, 2013) may be rational from the perspective of the business groups as it creates opportunities for economies of scope, reduces the risk of bankruptcy and lowers transaction costs through intra-group trading. For example, the SK group had 198 affiliated companies in 2023. However, the continued diversification and expansion of the *chaebols* tends to reduce opportunities for the creation of startups and the growth of small companies.

Figure 21. Productivity in Korean SMEs is low relative to large companies and has been declining



Source: OECD (2024).

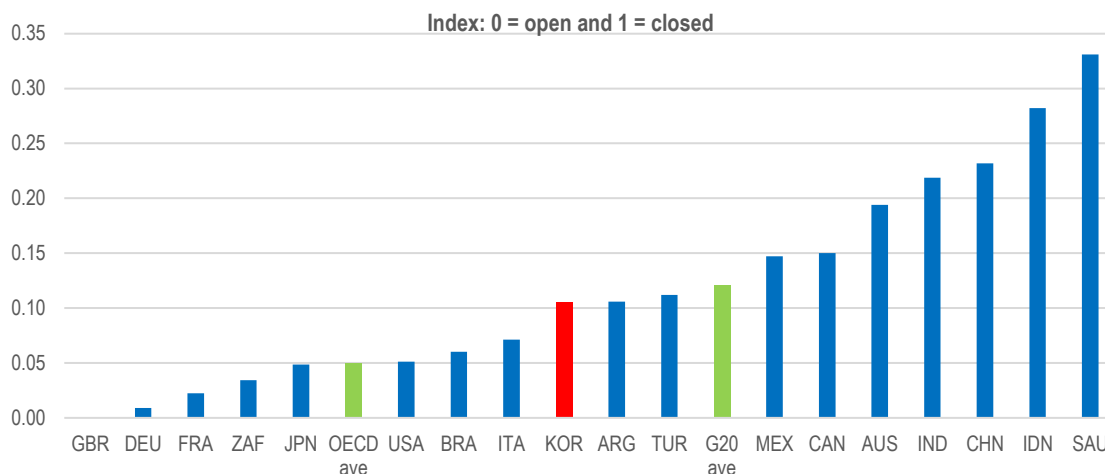
- **Market concentration:** The large role of *chaebols* increases market concentration with negative effects on competition and productivity. Affiliates of the top business groups had the largest market share of 70% of manufacturing business lines and 47% of service business lines (Jones, 2018).
- **Control by owner families:** The ability of inside ownership to control their affiliated companies despite small ownership shares weakens competition and distorts markets. Direct family ownership of the top four business groups in 2017 was only 0.9%, while other relatives held another 1.1%. However, the large share held by affiliated companies (48.6%) gave the owner families a majority share, allowing them to pursue personal interests rather than maximise shareholder value, a practice referred to as “tunnelling”. For example, owner families can set the prices of intra-group sales of goods, services and assets to favour affiliates in which they are large shareholders (Jones, 2018).
- **Unfair subcontracting:** Many large firms have profited from unfair relations with subcontractors. Studies have shown that significant increases in large firms’ profits tends to leave subcontractors’ profits unchanged (Chang and Woo, 2015).
- **The “Korea discount”:** The problems in the large business groups are considered to be responsible, along with concerns over North Korea, for the low price-earnings ratio of Korean companies listed in the stock market relative to their global peers (Asian Corporate Governance Association, 2024).

As noted above, the government has implemented a range of regulations to limit the *chaebols*, but this approach has had limited success. A strategy to level the playing field between large firms and SMEs that allows small firms to grow and increase productivity should include the following: i) strengthening competition through the KFTC’s competition policy and further reducing barriers to trade and to FDI inflows, which are double the OECD average due to foreign equity limits and restrictions on key foreign personnel (Figure 22); ii) greater efforts by the KFTC to prevent unfair subcontracting practices; and iii) improving corporate governance, which was ranked eighth, just behind India but ahead of China, among 12 Asian economies in 2023 (Asian Corporate Governance Association, 2024).

Policies addressed at the large business groups should be accompanied by changes in the government’s generous support for SMEs. The Korean Constitution states that the “State shall protect and foster SMEs”. Moreover, the Framework Act on SMEs requires the government to strive to expand support and investment to foster SMEs (OECD, 2024). SMEs receive a range of benefits such as lower tax rates at the central and

local government levels, exemptions that lower taxable income, preferential treatment in public procurement, exclusions from the MRFTA for SME associations, discounted prices for water and electricity and the right to hire foreign workers under the EPS. In 2023, a total of 1,646 programmes were in place, with 530 run by 18 central government ministries and agencies and 1,116 by local governments. Central government spending on SME programmes rose from 4.3% of its total spending in 2017 to 5.1% in 2023. Government-guaranteed loans were among the highest in OECD countries at 4.1% in 2021 (OECD, 2024).

Figure 22. Korea’s FDI restrictions were double the OECD average in 2023



Note: This index considers four main types of restrictions: foreign equity limits, discriminatory screening or approval mechanisms, restrictions on key foreign personnel and operational restrictions. Only statutory measures that discriminate against foreign investors, or which are deemed particularly more burdensome to foreign investors, are counted as FDI restrictions.

Source: OECD, [FDI restrictiveness | OECD](#), accessed 3 June 2025.

Well-designed government policies can boost productivity by correcting market imperfections such as underinvestment in R&D and financing for good companies that lack collateral. However, Korea’s high level of SME support has not narrowed the productivity gap between large firms and SMEs (Figure 21). Instead, evidence shows that they weaken competition and prevent or delay the restructuring of low-productivity SMEs. Public support that does not target market failures may shift labour and capital from more productive to less productive uses, thereby reducing productivity and output growth (OECD, 2024). Indeed, Korean SMEs receiving the most public support saw lower growth in productivity and value added than those receiving the least support (Woo and Han, 2017). Other studies by government think tanks have found that public support for SME financing lowered the productivity of recipient firms and increased the survival probability of incompetent ones (Jones, 2018). In addition, the size criteria to be classified as an SME (which in Korea depends on a firm’s sales and amount of assets) and thus eligible for benefits can discourage firms from scaling up. The so-called “Peter Pan” effect can thus prevent firms from achieving productivity-enhancing economies of scale (Tsuruta, 2018).

Even when market imperfections are identified, a subsidy may be unable to correct it and do more harm than good. Korea’s many SME programmes reduce transparency and oversight, raising risks of poorly designed subsidies and rent-seeking behaviour. Consolidating SME support into a small number of programmes with centralised rules, coordination and improved oversight would raise the likelihood that such support effectively targets market imperfections while minimising new distortions (OECD, 2024).

SME productivity is limited by their inability to invest in new technologies, given their generally weak financial position and lack of skilled labour. In 2017, the government announced that it would help 20,000 SMEs establish smart factories, which use information and intelligence technology – cloud computing, big

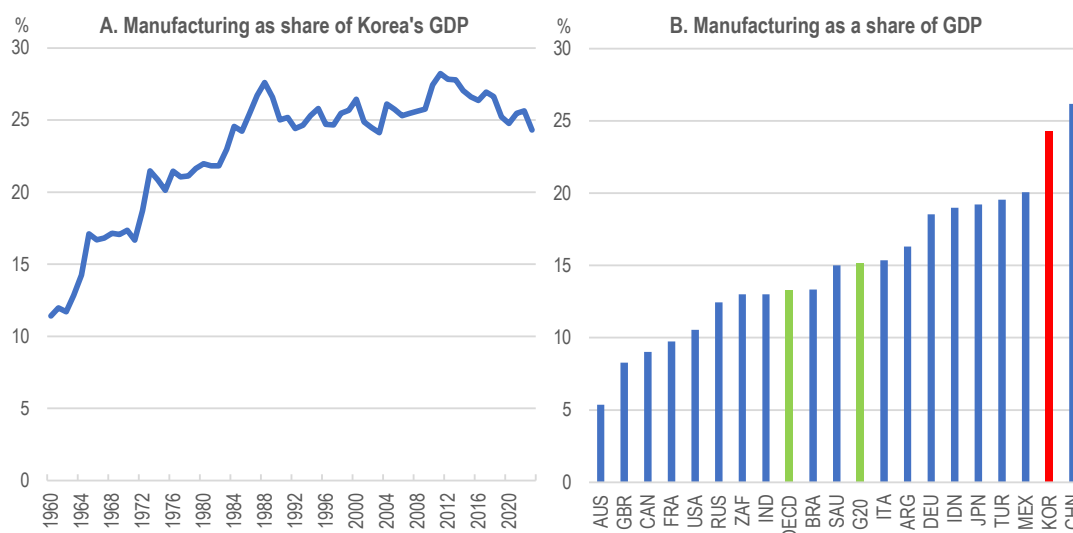
data, artificial intelligence (AI) and IoT – to move from traditional production process to a fully connected, flexible and optimised system. Half of the KRW 2 trillion (USD 1.85 billion) in funding was from the government, with the other half provided by the firms. In addition, the Korea Smart Factory Foundation supports SMEs that have limited technological capability (Jones and Lee, 2018). The government’s new target is to provide customised support to SMEs to create 25,000 SME manufacturing companies by 2027.

AI is central to the smart factory initiative and productivity growth, given the prospects of a rapid population decline. Korea’s role as the global center of memory chip technologies used in data storage systems gives it a significant role in the development of AI. Indeed, Samsung is fourth – after IBM, Google and Microsoft – in the number of AI-related patents in the United States. Korea launched a national AI strategy in 2019. Five universities were designated as AI Engineering schools, and Korea’s leading companies are investing aggressively in the technology. The number of AI Engineering schools has expanded from 5 in 2019 to 19 in early 2024 (OECD, 2024). Korea launched the AI Strategy High-Level Consultative Council, a public-private governance framework for AI, in 2024. The council has approved investment plans for 69 projects. Korea’s investments in semiconductors and its technical talent and links to global AI companies are making it a leader in the use and the development of AI (Ramage, 2024). This should significantly boost productivity growth through efficiency gains, particularly in SMEs and services.

Manufacturing and services

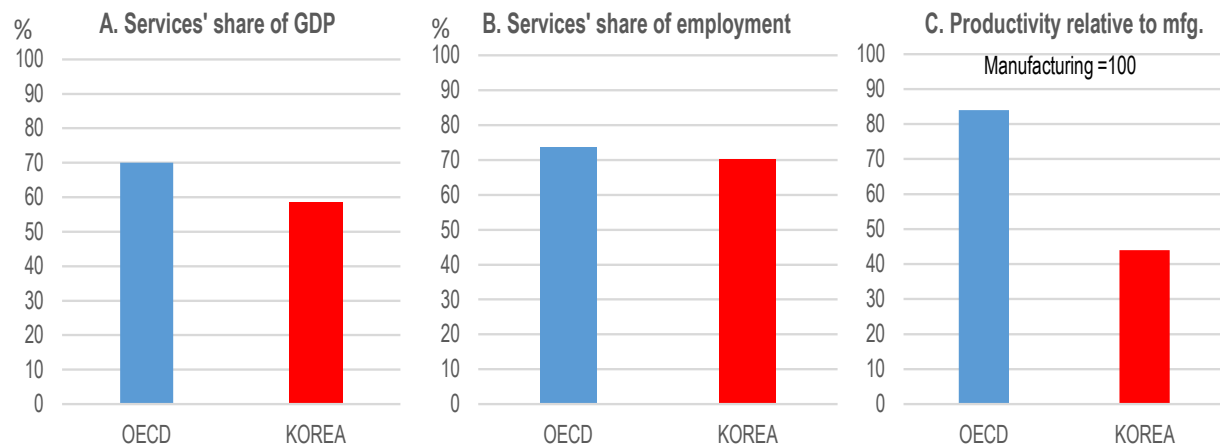
Korea’s export-led growth made manufacturing the backbone of its economy. Its share rose from 12% in 1960 to a peak of 28% in 1988. Although it has edged down, manufacturing’s share of GDP was the highest among G20 countries after China in 2023 (Figure 23). Manufacturing also accounts for 90% of Korea’s exports and more than 80% of its R&D. The service sector is relatively small compared to other OECD countries and its productivity was only 44% of that in manufacturing in 2017, far below the OECD average of 84% (Figure 24). Korea’s export-led development has siphoned capital, talent and other resources away from services and toward manufacturing. In addition, lower service sector productivity reflects their intrinsic characteristics, given their intangible and less standardised nature, the higher costs of switching suppliers (such as banks and telecom companies) and the fact that many services must be delivered in person. These inherent characteristics weaken competition and raise transaction costs for services above those for goods.

Figure 23. Manufacturing remains dominant in Korea



Source: World Bank, [Manufacturing, value added \(% of GDP\) - | Data](#), accessed 28 May 2025.

Figure 24. Korea's service sector productivity was far below that in manufacturing in 2017

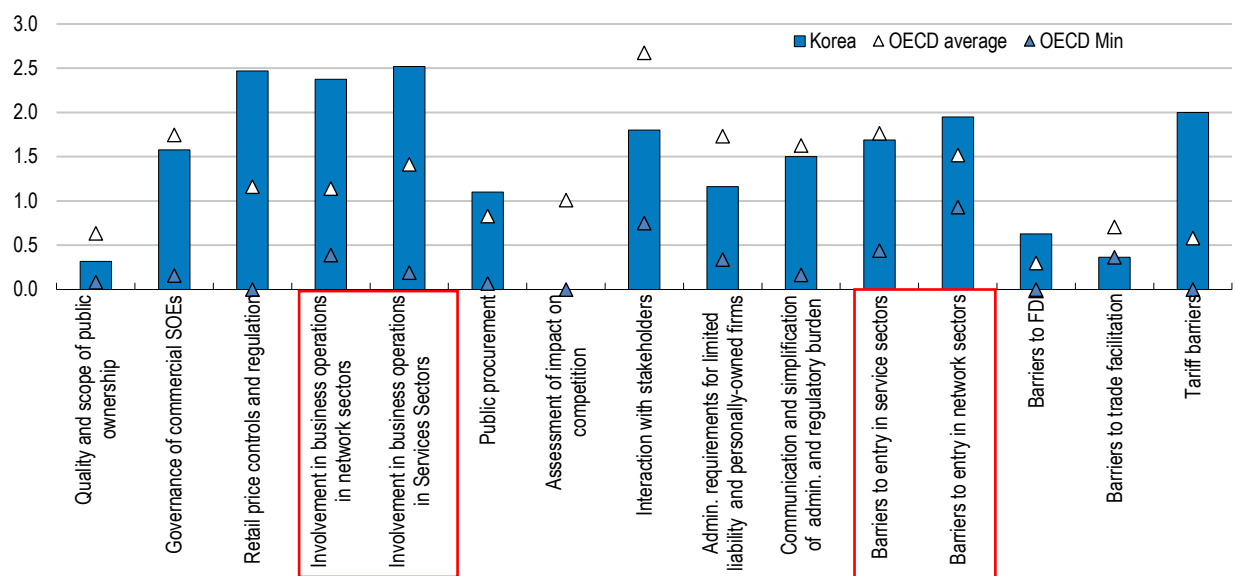


Source Jones and Lee (2018).

Boosting service sector productivity is becoming increasingly crucial as services' share of GDP rises with increasing income and population ageing. Three priorities to raise service sector productivity are:

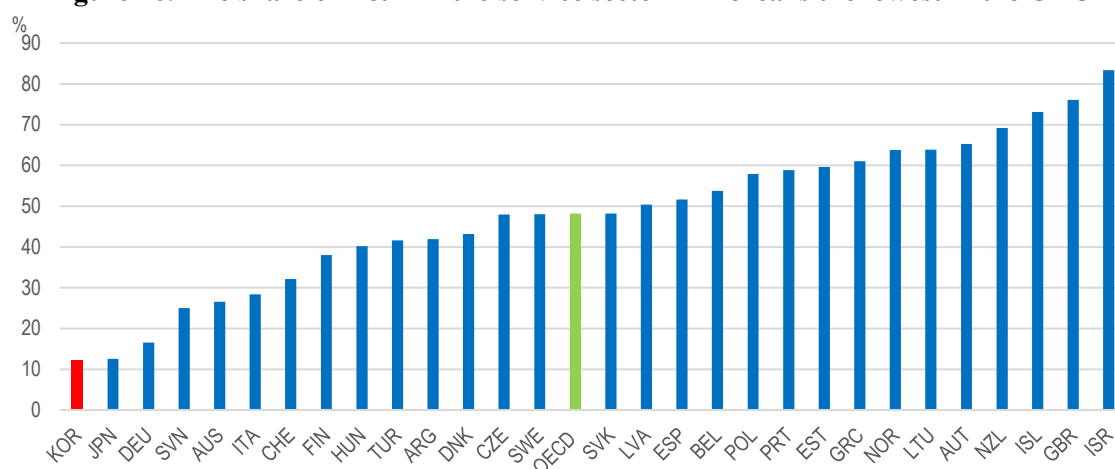
- Reducing product market regulation. According to the OECD's Product Market Regulation index, government involvement and entry barriers are high in Korea for service and network sectors relative to other OECD countries (Figure 25).
- Increasing the share of R&D in the service sector, which was 12.3% in 2021 (Figure 26). Although this has risen significantly from 3.4% in 2021, it is still the lowest among OECD countries.
- Boosting FDI inflows from their relatively low level (Figure 13).

Figure 25. Government involvement and entry barriers are high in the service and network sectors



Source: OECD, 2023 Product Market Regulations Index database.

Figure 26. The share of R&D in the service sector in Korea is the lowest in the OECD



Source: OECD, [OECD Data Explorer • Business enterprise R&D expenditure by industry](#), accessed 28 May 2025.

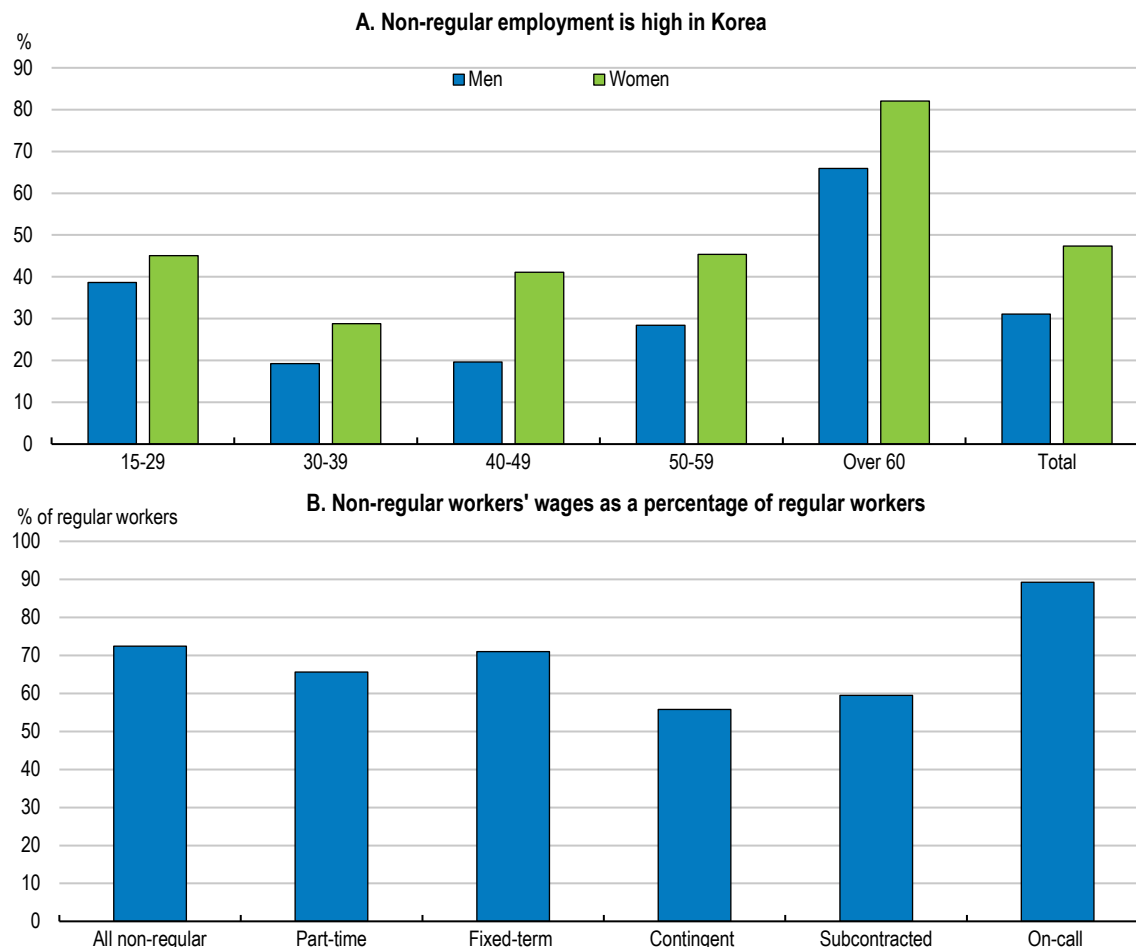
Labour market dualism

Dualism is deeply entrenched in Korea's labour market. Regular (permanent) workers receive high wages and social insurance coverage and strong employment protection. Non-regular workers, which includes fixed-term, part-time workers and atypical workers, receive lower wages, are less likely to be enrolled in social insurance systems and work in precarious jobs. In 2021, 31% of men and 48% of women were non-regular workers (Figure 27, Panel A). About two-thirds of non-regular workers are fixed-term employees. Consequently, the share of temporary employment in Korea was 26% in 2020, more than double the OECD average. Fixed-term contracts are limited to two years, at which point employees receive regular workers status and are covered by standard job protection. In practice, most fixed-term workers are dismissed and replaced by new fixed-term workers within two years, as granting them regular status significantly increases costs to employers and limits their flexibility to adjust their workforce over the business cycle (Jones, 2022).

Labour market dualism slows productivity and output growth. First, the high level of temporary employment and short average tenure discourage firm-based training, negatively affecting productivity growth. Non-regular workers receive only 1.8% of the training opportunities provided via employers (Yun, 2016). Second, it also encourages firms to rely on low-wage workers rather than invest in innovative technologies (Schauer, 2018). The average hourly wage of non-regular workers was 72% of that of regular workers (Figure 2.27, Panel B) in 2020. Fixed-term workers are penalised for their relatively short tenure, given the strong link between tenure and wages in Korea. The earnings gap is even larger in practice, as 62% of regular workers received company bonus payments, which account for around a quarter of annual earnings, compared to 21% of non-regular workers. In addition, the share of non-regular workers enrolled in the National Health Insurance, National Pension System and Employment Insurance, as well as in company pension systems is much lower than for regular workers (Jones, 2022).

Breaking down dualism requires addressing the fundamental factors that encourage firms to hire non-regular workers. Government surveys of employers report that they hire non-regular workers to ensure labour market flexibility to respond to market fluctuations, thereby avoiding the cost of laying off regular workers (OECD, 2013). A second reason for hiring non-regular workers is their low labour costs, which are partly due to their low enrolment rates in social insurance. Breaking down labour market dualism requires a comprehensive strategy of relaxing employment protection for regular workers and increasing the enrolment rate in social insurance and training for non-regular workers (Jones, 2022).

Figure 27. The share of non-regular employment in Korea is high and the receive low wages (2021)

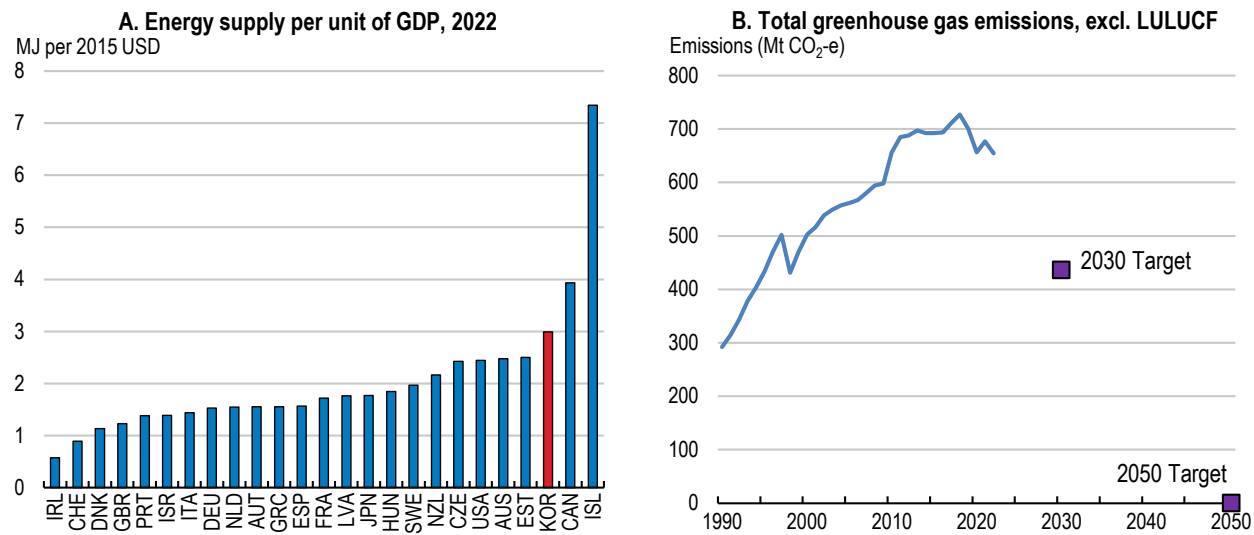


Source: Jones (2022).

Green growth and climate change

Korea was the world's thirteenth-largest greenhouse gas (GHG) emitter in 2023 and the third most energy-intensive economy in the OECD (Figure 28, Panel A). The high level of emissions and energy intensity reflects Korea's export-led growth strategy, which emphasized manufacturing sector. Achieving Korea's target of cutting emissions by 40% relative to its 2018 level by 2030 and achieving carbon neutrality by 2050 requires ambitious reductions in GHG emissions (Panel B). Achieving this target in the most efficient way possible by implementing a carbon tax would be the best pro-productivity approach. Korea established an emissions trading system in 2015 that aims to reduce greenhouse gas emissions. However, its effectiveness has been limited by the decision to auction only 10% of permits during 2021-25. Moreover, its coverage is limited to three-quarters of GHG emissions. A sharp increase in the use of renewable energy sources is necessary to significantly reduce emissions. However, Korea's underdeveloped grid transmission and distribution system are critical barriers to greater use of renewable energy.

Figure 28. Efficient climate change policies are needed to meet Korea’s carbon neutrality objective



Source: OECD (2024).

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