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The economic ascent of a technological power: South Korea

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Abstract

The chapter contains an analysis of the long-run trend and policies of South Korea' s economy. The main thesis is that a combination of historical events, wise industrial policies and the great effort of families, the state and enterprises to enhance the level of human capital and of technological progress, have strongly contributed to determine the Korean economic period of fast growth. Ageing of population, financial crises, the crumbling of the fordist model of development, difficulties in stimulating a rapid productivity growth in several service sectors and other factors have reduced the rate of economic growth, which remains, however, higher than the one prevailing in most industrialized countries.

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Contents.

1. Introduction

Another economic power has gradually emerged in East Asia: South Korea.

At the end of the Korean War, in 1953, South Korea was a very poor country, with a per capita GDP similar to that of the most deprived sub-Saharan African countries. It had suffered also from the devastation of the war period, the cruel division between the South and the North of the country and the sad memories of the Japanese domination in the 1910-1945 years.

It was a limited-size country, with a relatively small, largely mountainous, territory and a very dense population of about 21 million people, for about a quarter concentrated in big urban areas as Seoul and Busan.

Now, South Korea is the 12 th country in the world in terms of total GDP,[2] with almost 49 million inhabitants and a high technological level in various industrial and tertiary sectors. Its shipbuilding industry is the strongest in the world; its great chaebols (Samsung, LG, Hyundai, etc..) have inundated the world with their attractive mass-consumer products; its nuclear power and steel industries have increased their production and their exports; its building industry completes construction works in the Middle East and in several other parts of the world; its University and research laboratories have produced a great and increasing number of competent and highly regarded scientists and engineers. Seoul metropolitan area, with more than 20 millions inhabitants, is a modern, vibrant city, with lots of high-rise buildings, several luxury shopping areas and some shabby quarters, but no miserable ones as in Mumbai or Rio de Janeiro.

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[2] According to the rankings based on PPPs. (Purchasing Power Parities) , South Korea was 12th in the data-set of Conference Board-GGDC (2010). See also World Bank (2009).

How was this "miracle of the Han river" possible, which actually has happened in great part of the country and not only in the Han's basin, the Seoul's area ?

In order to reply to this question it is necessary to commence from the turbulent years of the Korean war and its proximate times.

2. The economic consequences of the wars

The years succeeding the second world war were desolate years. Korea had been liberated from the Japanese domination, but it had been divided into two zones: north and south of the 38° parallel. The northern part, under a communist regime, was heavily influenced by USSR and China. The southern part, since 1948 under the authoritarian regime of Syngman Rhee, was heavily influenced by the United States[3]. North Korea, with less than half the population of South Korea, was less densely populated and relatively better off, having more natural resources, some heavy industrial activities and relatively better infrastructures than the Southern zone, but both were poor, mainly agricultural, countries[4]. However, although North Korea was heavily assisted by the Soviet Union, it was less aided than South Korea, which received a consistent financial help from the United States.

When in June 1950 North Korea invaded South Korea, there was the outbreak of a long, bloody war[5], which devastated the country, led to millions of victims and

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3 From the end of the war up to August 15, 1948 South Korea was ruled by the a US military government. When Singman Rhee was elected president in August 1948, the power was transferred to South Korean civil government, dominated by Singman Rhee and his increasingly authoritarian regime.

4 According to the estimates by Yeon Ha-Cheong (1987) North Korea had until 1966 a higher per capita GDP than South Korea, but was then surpassed and greatly distanced. By 1985 South Korea had a per capita GDP 2.9 times higher than North Korea.

5 On the Korean war, see, for example, Alexander (2000).

desolation in many families, separated by a cruel and almost impassable North- South border.

At the end of the war, in July 1953, the economy of South Korea was in shatters: many factories, farms and essential infrastructures had been destroyed, many valuable men and women had died. Moreover the pre-war economic linkages between the Southern and the Northern zones, already substantially cut down since 1945, had been completely severed. Before the sealing of the border, many people had escaped from North Korea to the South, while, mainly for ideological or family reasons, some people had made the opposite choice.

However, the post- Korean war period further developed and re-enforced some radical social and economic changes that had already begun since the last decades of the XIX century and had accelerated since 1945.

The rigid traditional Confucian social ranking in which noblemen, scholars, government officials and farmers, had been considered superior to merchants and entrepreneurs, had gradually faded away.

The penetration of the Christian religion, mainly in its protestant version, had deeply influenced Korean society leading to the so-called *new Confucian ethics*, defined by Tu Wei-ming as "an amalgam of family and collectively oriented values of the East and the pragmatic economic-goal oriented values of the West" [6].

These changes, which maintained the high traditional value given to education, scholarship and government guidance, but also enhanced the social status of entrepreneurs, managers and merchants, were crucial in the modernization of the Korean economy and society.

In the late 1940s there was also great land re-distribution and a land-reform law in 1950 which contributed to reduce income and wealth inequalities, further attenuating the

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[6] See Tu Wei-Ming (1984), p. 110. See also Song Byung-Nak (1992), p. 50. In present Korea over 42% of the population professes to be religious, of which about half is Christian, in large part Protestant.

traditional divisions in society. Less income inequality meant also increasing possibility for poorer families to heavily invest in the education of their children preparing, thereafter, a more homogenous society for the future generations. The Gini index of income distribution was in 1965 0,34, went up to 0.39 in the second half of the 1970s and then diminished to 0.36 in 1985, therefore appearing similar to Italy's index, inferior to the United States' one and much lower than the index prevailing in most developing countries, although higher than the one of Japan and West Germany.[7]

Another factor which contributed to reduce economic inequality in the Korean society is the relatively balanced rural/ urban household income existing in Korea in the 1950-1988 period, which contrasts with the very large gap usually existing in other emerging or developing countries. According to Economic Planning Board's and Bank of Korea's data, from 1965 up to 1988 the rural/ urban income ratio oscillated between 67.1% and 116 %[8], while in most other developing or emerging countries the ratio was 20-40 %. This relatively balanced ratio is partly due to protectionist policies and generous subsidies conceded to farmers and to the compression of average urban wages in the period of authoritarian regimes. In spite of these policies, South Korea experienced, as other emerging countries, a radical structural transformation from a mainly agrarian country to an industrial and tertiary one. The share of agriculture in total GDP and labour force fell from, respectively, about 44 % and 62% in 1955 to 3% and 7 % in 2008. South Korea's urban population, in cities over 20.000 inhabitants, rapidly increased from about 36% in 1955 to over 80%. in the 2000s.

Another legacy from the Korean war and the division between the two Koreas was the keeping of a very large and powerful army. Partly owing to the pressure of the big military North Korean army, South Korea organized and maintained a sizable, well equipped, but very costly army. However, military budget , at the time, was substantially covered by the United States.

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[7] See Song Byung-Nak (1992), pp. 173-4.

[8] ibidem, table 10.1, p. 170.

The military sector had both a negative and positive role in South Korean society. It was subtracting many resources to the civilian production and was above all responsible, in the years of authoritarian and then despotic rule, of a very brutal repression of civil society, civil rights and political and social movements. On the other hand it had some technological spill over effects on the civilian sector and imported, mainly by the United States, new forms of organization and management, which were diffused, through the extensive military service, to a large part of the population. Moreover, the military-political leaders sometimes imposed positive strategic lines on economic growth policies, although excessively favouring main corporations, the giant chaebols, and overlooking small and medium size enterprises.

3. From the Korean war to the building of democracy

As we can see in Table 1, the rate of economic growth in the Korean economy was exceptionally rapid until the financial crisis of 1997-8, so that South Korea merited entering the restricted club of " the four Asian tigers", which included also Taiwan, Hong Kong and Singapore. In a few decades South Korea passed from the status of a poor developing economy, heavily dependent on foreign help, to being since 1970 a NIC (newly industrializing country) and then becoming in the 2000s a fully industrialized donor country, with a sizable current account surplus, rich international reserves and substantial donations to poor developing countries.

The brisk acceleration of growth had happened since the beginning of the 1960s, through a combination of positive factors and of long-run economic policies.

A positive factor was common to other emerging countries and was the possibility to exploit Gerschenkron' s advantages of *relative economic backwardness*.

The first advantage was associated with the gradual, but massive, transfer of workers from agricultural to non agricultural jobs, where labour productivity was on the average higher. However, this advantage was lower than in other countries where the difference between productivity in agriculture and in other sectors was more marked.

Table 1: Korean development in the years 1953-2009

(% annual average rates of change)

Phases	Years	Real GDP	Real per capita GDP	Population
Authoritarian regimes	1953-87	7.8	5.7	2.1
More democratic regimes: the fordist years	1987-97	7.7	6.6	1.1
East Asian financial and real crisis	1997-98	- 5.8	- 6.7	0.9
Recovery, restructuring and new expansion in a globalizing world	1998-2007	5.6	5.1	0.5
Global financial and real crisis	2007-2009	1.2	0.9	0.3

The data on GDP and per capita GDP for 1950-2007 are in PPS: source: Conference Board- GGDC (2010); KERI (2010) for 2007-9.

A second advantage was the possibility to introduce higher technology mainly through the acquisition of foreign more advanced investment goods or licenses for new goods, or through the *imitation* of foreign technology[9]. This was made possible by three principal factors: a) a relatively high rate of investment, although lower than the one of

[9] In his fascinating book *Imitation to Innovation. The Dynamics of Korea's Technological Learning,* Linsu Kim (1997) vividly explains the difficult process by which Korean economy has been successful in constantly upgrading its technological level passing from the status of almost passive imitator to the status of real innovator for several goods and services.

Japan in the 1950-73 years and of China in the 1978-2010 period; b) an increasing effort in R.&D. (Research and Development); c) heavy spending by the state and by families on education, with a fast rise in the level of education of population and labour force. The average number of years of schooling of the population rose from 5.0 by 1966 to 6.6 in 1975, to 8.5 by 1985 [10] The tradition of giving a great importance to education and heavily investing in children's human capital was accompanied, in the post-war period, by a less unequal income distribution among families and a better availability of good schools and Universities.

Economic policies were also very important for the rapid economic growth. In the 1953-1987 period there was a heavy state intervention in economic activities. There was a strong economic planning activity, strictly controlled by the presidency, which determined the principal objectives of long-term industrial policy[11]. Chaebols, the great Korean conglomerates, were important actors of the state-oriented policy because they provided managerial and technological skill, the start-up of initiatives in new sectors and the size to compete with foreign economic giants. At first there was an import-substitution policy, together with an export-oriented industrialization policy. Later on, when Korean infant industries were stronger, there was a gradual selective reduction of import duties, with the continuation of the export –oriented policy. The, state, following the Japanese model, favoured also the constitution of general trading companies, which helped to promote exports and check imports. Until the 1980s most banks were State's controlled and they were essential for the financing of enterprises[12]. So, through the control of banks and of interest rates and fiscal incentive-disincentive schemes, the state could direct the investment of main corporations towards certain objectives, of which foremost was the building of heavy industry and the expansion of exports. The state

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10 See Song Byung-Nak (1992), p. 26 and Economic Planning Board ; National Bureau of Statistics, *Population and Housing Census* (1966, 1975, 1985).

11 The daring export policy and other important strategic choices were suggested by Irma Adelman, who acted as consultant to the Korean government .

12 Several banks were privatized in 1981-83, but they were heavily influenced by the state policy also in the following two decades.

forced, for example, the Hyundai group to enter the ship-building industry, favoured in various ways the building of a strong steel industry and the development of the automobiles and the micro-electronics industries, created or improved infrastructures and educational and R.&D. establishments; diffused technical knowledge through a network of public research institutions (GRIs) often working in collaboration with private corporations, etc.[13]

To some extent Korea utilized Japan's and Taiwan's growth examples of a "state developmental model"[14], but having a considerably smaller internal market, Korea had to rely much more than Japan on the growth of external demand in order to achieve the desired economies of scale.

This great effort to rapidly expand exports, while at the same time slowly and selectively reducing protectionism, together with a heavy injection of foreign aid, mainly from the United States, and an undervalued currency, contributed to a steady reduction of the trade deficit of the balance of payments, which became positive in 1986. Foreign debt was in the 1963- 85 very high and increasing, but the improvement in the balance of payments permitted to reduce it in 1986 and in some of the following years.

Moreover the country succeeded in continuously upgrading the technological level of its production and of its exports. The export up-grading is so described by Linsu Kim:

"In the mid 1960s Korea began exporting textile, apparel, toys, wigs, plywood and other labour- intensive mature products. Ten years later, ships, steel, consumer electronics and construction services….By the mid-1980s computers, semiconductor memory chips, videocassette recorders, electronic switching systems, automobiles, industrial plants and other technology-intensive products were added to the list of Korea's major export items, with semiconductor chip topping the list in terms of export value. In the mid-1990s Korea is working on such next- generation products as multi-media technology,

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13 See Kim Linsu (1997) chapters 1-2 and 5-7.

14 On the influence of the Japanese model on Korea, see, for example, Amsden (1988), Boltho, Weber (2009).

high-density television, personal communication systems, and a new type of nuclear breeder… [15]

However, these economic achievements were reached in a grey and oppressive social and political environment. The authoritarian governments of presidents Rhee, Park and Chun greatly limited civil rights and brutally repressed opposition movements, until the success of the democratization movement in 1987.

4. The rapid fordist growth (1987-1997)

Democracy had been partially achieved in 1987 and strengthened since 1992 with the election of a new president of the opposition party.

In the 1987-97 period the country passed through its *fordist years*. As we know from chapter 1, the *fordist model of growth*[16] is present where there are at least two major components: a) important *economies of scale* which determine high rates of growth of productivity and b) a *rapid increase in unit-wage and employment*, which determines a rapid rise in total wages, mass- consumption and aggregate demand.

In the 1960s, the 1970s and part of the 1980s the authoritarian governments had banned labour unions and maintained a policy of low wages and long working hours in order to ensure the increase of profits and investment of great chaebols and the rapid rise of production and exports. In this context the fordist model could not build up, since it lacked a basic element: the rapid rise of wages.

In the period 1987-97 there were instead in South Korea both a rapid increase of production of sectors, such as the automobile, domestic electrical appliances and micro-

15 See Linsu Kim (1997), p. 14.

16 See Valli, Saccone (2009).

electronic industries, which had important scale economies, and a brisk rise of unit wages, spurred by the liberalization of labour unions and by their pressure in favour of higher wages. Employment continued to increase, under the impulse of extensive investment induced by growing internal demand and the rapid expansion of exports, but also because employment in services could substantially increase over-compensating the effects of labour saving policies of some corporations of the manufacturing export sector[17].

The fast rise in sales of automobiles, colour TVs, PCs, and, later on, chips and other micro-electronic products both in the domestic and in the foreign markets was also made possible by a continuous *technological up-grading* made by some of the major chaebols and other Korean firms, as we will see in more detail in paragraph 7.

In Korea the fordist phase has occurred much later than in the United States, where it had begun in 1908, and in Western Europe and Japan, where it prevailed in the 1950s and in the 1960s entering in crisis since the 1970s. Therefore Korea's fordist phase could combine fordist and post-fordist elements, such as an increasing recourse to the sub-furniture of components and "just-in time" practices.

However this period of rapid growth had been mainly based on the great expansion of the economic activities of major chaebols, heavily assisted by the state and financed by state banks. Finance was linked to export- performance of chaebols. These big corporations, having "soft" constraints on their finances, had continued to increase their investment, their acquisitions and their debt even in conditions of declining profitability or of heavy losses. The increase in aggregate consumption and the decline of profits margins had begun to compress the internal saving rate, so that Korean banks became favourable to an increasing liberalization of financial transactions. The entrance of South Korea in OECD was preceded in 1994 by a substantial liberalization of capital

[17] See Moon (1994) for an analysis of the employment effects of wage rises in an open economy such as South Korea.

movements[18]. Big chaebols and main Korean banks could thus rapidly increase their foreign debt. The fast rise in internal demand of consumer and investment goods was even greater than the increase of production, so that trade and current account balances returned to register heavy deficits in almost all the 1990-1997 years[19]. This led to a cumulative rise in the stock of foreign debt in South Korea and therefore to a sharp worsening of expectations in financial international markets, although there was the continuation, until 1997, of a rapid growth of real GDP. Exports rose rapidly until 1994, but there was a drastic slow down in their rate of growth in 1995-7 partly because of the devaluation of the Japanese yen, partly because of the slack of world demand and the reduction in the price of chips, automobiles and garments, all products which accounted for a large part of exports.

5. East Asia' s financial crisis and Korea's recession

In 1997 in Thailand there was the outbreak of a great financial and currency crisis which led to a deep financial and real crisis also in other Eastern Asian countries like Indonesia, Malaysia, and South Korea.

Singapore, Taiwan and Hong Kong, although influenced by the crisis, had limited damages, while China could continue, almost untouched, its rapid growth and Japan went on struggling with the structural crisis there occurred since 1990.

South Korea was heavily hit by the crisis, although less than Indonesia, Thailand and Malaysia.

As we can see from table 2, the origin of severe financial and currency crises in usually

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18 See Adelman, Song (1999) p. 10.

19 The current account of the balance of payments was negative in all the period, with the exception of 1993 (see Table A3 of the Statistical Appendix).

relatively uniform. It generally stems from a prolonged period of structural weakness in the current account of the balance of payments, worsened by a particular fragility in the banking and financial system of the country[20].

In fact in almost all cases considered in the table, there were at least three years of deficit in the current account of the balance of payments [21] and excessive foreign debt of banks,

Table 2

Indicators on financial and real crises in selected countries

Countries	Year of the crisis	Balance of current account as % of GDP in the 3 years preceding the crisis (annual average)	Years of deficit in the current account preceding the crisis	Conditions of the country's banking and financial system	Rate of change of real GDP in the crisis' year or in the year following the financial crisis
Mexico	1994	- 6.5	> 5	Fragile	- 6.2 (1995)
Thailand	1997	- 7.3	> 5	Very fragile	- 8.0 (1998)
Indonesia	1997	- 2.7	> 5	Very fragile	- 13.0 (1998)
Malaysia	1997	- 6.7	> 5	Fragile	- 6.8 (1998)
South Korea	1997	- 2.4	3	Fragile	- 6.7 (1998)
Russia	1998	1.6	0	Very fragile	- 4.5 (1998)
Brazil	1999	- 3.7	> 5	Fragile	0.8 (1998)
Argentina	2001	- 4.1	> 5	Fragile	- 10.8 (2002)

Sources: IMF (2004), World Bank (2004); Conference Board-GGDC (2005). The table is drawn by Valli (2005), p. 153.

[20] The 2007-9 global crisis had peculiar features because originated in the United States, which, besides being the largest economy and the largest financial market in the world, held the key-currency in the international monetary system.

[21] The only exception is the 1998 Russian crisis, which did not originate by a deficit of the current account of the balance of payments, but by a particularly fragile banking and financial system and the massive outflows of capitals from the country.

enterprises and sometimes of the states, accompanied by a rapid rise in total foreign debt. All this determined a growing distrust in the national currencies and adverse speculative capital movements, followed by a devaluation of the currency, severe deflationary stabilization policies, a heavy fall in investment, production and employment, etc. In other words, all severe financial crisis has been followed by a deep real crisis, as the data of table 2 confirm.

In the case of East Asia the crisis was probably worsened by the cumulative deflationary effects due to the considerable interdependence existing between the economies of the area, to the policy mistakes of the national governments and to the strict conditions imposed by IMF when conceding its financial aids[22].

South Korea's crisis, although largely depending, as in several other countries, on the deterioration of the current account and on the fragility of the banking and financial system, had also some peculiar aspects, well analyzed by Adelman and Song[23].
There was in South Korea "the combination of a highly-leveraged economy; a low-information, poorly regulated domestic financial system; with an open capital market operating in a globalized financial system which was excessively liquid …"

Moreover the Korean government made several policy mistakes. First, it tried to continue to loosely peg the won to the dollar and did not devaluate the won "in tandem with the Japanese yen", so that it accumulated growing trade deficits in the 1994-97 years, because of the overvalued won and the large increase in trade deficit with Japan.

Secondly "government policy encouraged a very rapid growth of wages", which increased more than labour productivity. Thirdly, "the government adopted a high-interest rate, tight money policy, which set domestic real interest rates way above world markets" and then encouraged banks and firms to import capitals from abroad.

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22 See, for example, Stiglitz (2002).

23 See Adelman, Song (1999), pp. 7-8

Moreover, most of these capitals were short–term, and so dangerously volatile. All this determined a large profit squeeze for most of the firms and a rapidly growing foreign debt, preparing the pre-conditions for the financial unrest. The crisis was aggravated by the futile attempt of the government to save Hambo steel and Kia motor and to defend the currency depleting the international reserves in dollars. It was also worsened by the under-development of the Korean financial system, the deficiencies in corporate governance of the major financial and industrial groups, the excessive leverage and debt ratio of most firms, the widespread corruption and the too early liberalization of capital movements.

In more general terms, as Eichengreen and Chung have maintained, " it was the tension between institutional inheritance and current economic circumstance that was at the root of the crisis: having exhausted the scope for growth through catch-up, Korea needed to move toward a more flexible, innovation-friendly economic model. Yet its chaebol-bank-and government - centered arrangements remained locked in place, placing the prospects for continued growth at risk. It was this tension that set up the stage for the crisis that erupted at the end of 1997".[24]

The impact of the 1997-98 crisis on the economy of South Korea was very deep, in spite of two packages of macro-economic measures which the government introduced in 1997 in the attempt to attenuate the crisis. Total investment collapsed, real GDP fell by 6.7 % in 1998, the rate of unemployment went up from 2.6 in 1997 to 7% in 1998, the won depreciated by about 50%, many firms and banks went in bankruptcy, or had to be radically restructured, or were sold to foreign capital. The entire productive and financial systems were profoundly re-shaped. Income distribution worsened becoming more unequal and relative poverty ratio increased from 9.3 % in 1996 to 13.1% in 1999[25].

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[24] See Eichengreen, Chung (2004), p. 4.

[25] See Kim Sung Teak (2010), p. 21.

6. The recovery and the globalization years

However, by 1999-2000, South Korea had already recovered the pre-crisis level of real GDP and had inaugurated a new period of economic expansion, although with a rate of growth significantly lower than in the years preceding the crisis. The recovery was facilitated by the government policy undertaken since the end of 1997 partly in order to obtain a substantial IMF's financial support, partly under the genuine conviction of the new president, Kim Dae –Jung, that the too strong relations between the State and the great chaebols had to be severed or at least curtailed and both the financial system and the industrial sectors had to be drastically reformed and restructured.

The government had let some of the major chaebols go into bankruptcy or in default: the Hanbo steel , the 14th chaebol in terms of assets, after a futile attempt of public rescue; the Sanmi group; two affiliates of the Jinro group; the Dainoi retailing chain; the Ssangyong business group, the sixth largest chaebol; the Kia corporation, the third major car maker, etc. It also allowed the acquisition of some banks by foreign capital and the sale of the Daewo automobile corporation to the US company General Motors.[26] In general the Korean government tried to push the main chaebols to reduce their debt and their diversification, concentrating more on their core business. Moreover, it privatized several State- controlled banks often with large recourse to foreign capital, with the aim of modernizing the banking and financial system, and reduced some of the rigidities of the labour market. On the whole, the Korean economy emerged from the crisis stronger than before, having reduced, but not fully eliminated, some of its main structural problems.

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26 See Adelman, Song (1999), p. 1. Kia corporation was then absorbed by Hyundai which thus considerably increased its productive capacity, becoming in 2000 the 5th largest car maker in the world.

After the recovery of the economy there was, in the 1999-2007 years a vast increase of *globalization* in South Korea's economy. Until 1997 there had been a rapid process of *internationalization,* mainly based on the enormous increase of exports and imports. But relatively few FDI had penetrated into the Korean economy and even less FDI had been done abroad by Korean firms. Financial globalization had already begun, but the state and central bank have continued tried controlling it, although with declining success. After the 1997-98 crisis, the situation radically changed. As we can see in Table 3, FDI stocks began to rapidly increase, in particular since the late 1990s. In 2008, in spite of the crisis, outward FDI continued increasing and their stocks overtook for the first time inward FDI.

In the meanwhile there was also an important change in the geographic composition of exports. While traditionally Korean exports had gone mainly to the triad: US, Japan and EU, in recent years they have more and more been directed also to emerging countries, as China and India. This change has largely contributed to smoothing down the effects of the 2008-9 global crisis on the Korean economy, because these emerging countries have continued to have a positive growth in 2008-9, although a bit less rapid, while the triad has suffered from a very sharp recession.

Table 3

Stock of FDI in South Korea. (as percentage of GDP) : 1990-2008

Stocks of FDI as percentage of GDP	1990	2000	2007	2008
inward	2.0	7.1	11.4	9.8
outward	0.9	5.0	7.1	10.3

Source: Unctad (2009)

All these changes, and particularly the de-localization of part of the production made through rapidly growing outwards Korean FDI in China and other emerging countries, has had important effects on Korea's economy and society. Most chaebols have continued to increase their production and sales, but have drastically decreased employment in Korea in the last decade. Although this effect has been partially compensated by a rise in employment in smaller industrial firms and in services, the rate of employment has remained relatively low, particularly for young people and women. The opportunity to get an good inland job for Korea's youth has declined, in a period in which the supply of highly educated people has considerably increased. Creeping forms of "intellectual unemployment" or of bad or precarious utilization of human capital have emerged and grown over time. Growing youth's discontent and social unrest might ensue.

Moreover, the increasing use of cheaper work in de-localized plants in poorer countries and the growing competition of immigrant workers on Korea's soil has led to a increasing income gap between low- income workers and top managers, highly-ranked public officers, professional men and successful entrepreneurs, so that income inequalities have continued increasing.

7. Technological upgrading and human capital

One of the major factors which can contribute to explain the remarkable long-run success of the Korean economy is its capability to continuously increase its human capital and its technological level.

Human capital can be improved through three main ways: the rise in the educational level of population and labour force, both in quantity and in quality; the increase in the processes of *learning by doing* and on-the-job training; the exposition of the labour force

to an increasing input of information of new technological contents and of the main results of R. & D. activities.

The first way has been followed with a fierce application by Korea's society. Korean have always greatly appreciated education and scholarship, but in traditional pre-Second World War society a few people had the material possibility to attend higher education, whose access was mainly reserved to Japanese or to noblemen or rich people. The reforms of the post-war period, leading to less income and wealth inequalities, made possible the access to education to the vast majority of the population. Not only the government invested in education much more than most other countries at a similar level of development, but the parents made enormous sacrifices in order to ensure better education for their children. If we consider also the informal spending on education due to long hours of private tuitions, etc.. total expenditures for education were extraordinarily high. " According to the estimates by Kim Ming Soak of the Korea Development Institute, total expenditures for education amounted to 13.3 per cent of GNP in 1984, including both private (6.9%) and public (6.4%) spending".[27] These estimates were about the double of the corresponding figures of the US and Japan in those years. Even if we consider more conservative estimates based on official OECD figures, total public and private spending on education in South Korea in per cent of GDP remained 7.2 in 2005, one of the highest levels in the world, superior to those of richer countries as the US and most Western European countries[28]. These generous expenditures have led to a rapid increase in both quantitative and qualitative education indicators. The average years of schooling of the population has almost tripled from the 1955 up to now. The number of University students and graduates in per cent of the population of the corresponding age groups is among the highest in the world. According to the 2006 PISA tests South Korea was the top country in the world in

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27 See Song Byung-Nak (1992), p. 51 on the basis of data by Kim Myung Sook (1986).

28 See OECD (2009). Korean's level was inferior only to those of small countries as Iceland, Israel (8 %) and Denmark (7.4%) , but higher than the ones of the US (7.1%) , United Kingdom (6.2 %), France (6.0 %), Germany (5. 1%) and Italy (4.9 %).

reading, second in maths, eighty in science. [29] Moreover, in 2007 South Korea was the top country in the world for household access to internet (94.1%),

The exposition of Korean labour force to learning by doing in high- tech sectors was also comparatively high. For example in 2006 South Korea was the top country in the world as share of ICT manufacturing in per cent of total manufacturing value added (21.1 %) and the fourth in the world in share of telecommunication service in per cent of total business services value added[30]. South Korea is also strong in the automobile industry, which, although being a mature sector, is an important producer and user of medium-high technology, and it is striving to rapidly improve its position in aero-spatial activities; machinery; fast trains; nuclear plants; bio technologies, etc.

In the field of R.& D. South Korea has shown the almost ferocious determination demonstrated in its human capital building. Its expenditure on R.&D. as per cent of GDP rose from the low level, typical for developing country, of 0.3 in 1965 and 0.4 in 1975 to 0.8 in 1980; 1.6 in 1985 (surpassing Italy); 2.6 in 1994 (surpassing France, Germany and UK), and 3.5 in 2007, one of the highest level in the world. [31] This huge effort was initially mainly due to public expenditure, but since the mid- 1980s it was more and more dependent on the very rapid increase of investment in R.& D made by great cabals, as Samsung, LG and Hyundai, and by other firms, often benefiting from generous incentives provided by the government. Since the mid-1990s the share of private R.& D. on total R.& D expenditure has been the world highest, over 80 %. The number of researchers per 10 000 of total population ski-rocketed from 0.7 in 1965 to 26.4 in 1994 and to 45.8 in 2007.[32] The ratio of researchers as per cent of employed people was in 2006 fourth in the world[33]. Also a rough, but meaningful, indicator of the

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29 See OECD (2009).

30 Ibidem

31 See Linsu Kim (1997), pp. 54-5 and OECD (2009).

32 OECD (2010 a)

33 OECD (2009)

output of R.&D., as the total number of "triadic" international patents (patents registered in US, EU and Japan, steadily rose over time, overtaking almost all European countries although remaining lower than the ones of United States, Japan and Germany.

But a rise in the technological level of a country, if on the long run is based on a good educational and R.&D. system, also depends on a plurality of other factors: on the rate of growth of investment in new plants and machines, incorporating a higher technology; on the learning by doing processes for the labour force; on the innovative activities both for new processes and for new products; in the capacity of attracting foreign capital and foreign know-how; in the introduction of more advanced forms of labour organization, production and marketing techniques and corporate governance; on the capability of rapidly diffusing innovations in the productive system, etc. In all these aspects South Korea has performed particularly well, but with some shadows for the future. It has successfully passed from an imitative, rigidly planned economy, to a more flexible and innovative one. It has invested very much in new machines and plants, but the rate of growth of investment has decreased since 1997. It has exposed a lot of workers to important processes of learning by doing, but its rate of employment has remained relatively low, in particular for young people, also because of the increasing de-localization of productive and research activities abroad. It has attracted less foreign capital incorporating foreign know-how than other larger emerging countries, as China or Brazil. It has improved since 1998 corporate governance, but its has not eradicated corruption and excessive linkages between the state and major corporations. It has tried to rapidly diffuse innovation to small and medium size enterprises, but with mixed results. Moreover, as most European economies, it has overlooked demographic problems, little by little becoming an ageing society, with one of the lowest fertility rates in the world. In the very long-run an ageing society becomes perhaps wiser, but much less innovative and dynamic.

8. The 2008-9 crisis and its aftermath

In 1997 in the United States there was the outbreak of the great sub-prime financial crisis, followed in 1998 by a severe generalized financial crisis in most industrialized countries and then, in 1999, by a widespread real crisis and in 2010 by the Greek crisis and the, probably temporary, weakening of the euro.

South Korea has been deeply affected by the global financial crisis, but the impact on banks, big corporations, small firms and the real economy was much less pronounced than in the 1997-8 East Asian crisis.

Many conditions had radically changed between 1997 and 2007 in South Korea. Current account balances had been in surplus since 1998, so that foreign debt had been reduced and a huge amount of international reserves had been built up. Corporate finance was in 2007 much sounder both in big corporations and in main banks. The debt ratio of main chaebols and their profitability had returned to normal. Private banks, largely controlled by foreign banks, were in much better financial conditions than in 1997 and were much less dependent on state's directives and political influence. Financial markets were more diversified and sophisticated than in 1997 and external trade was less dependent on the US, Japan and EU, but more oriented towards better performing emerging countries.

However, the continuous increase in the ratios of international trade and of inward and outward FDI on GDP had further risen the exposition of Korea's economy to external shocks. So, when in 2008, after Lehman Brothers' mid-September bankruptcy, the global financial crisis violently struck, South Korea was also badly hurt. First, there was

a sharp liquidity crisis, mainly due to short-term capitals outflows, only partly compensated by limited portfolio inflows. There was, moreover, a large currency devaluation[34] followed by widely oscillating rates of exchange. There was a sharp downfall in the stock- exchange market, followed in 2009-10 by a partial recovery. There was consequently a real crisis, although much less pronounced than in the US or Europe or in the 1997-98 Korean crisis. Real GDP's percentage rate of growth diminished from 5.1 in 2007 to 2.2 in 2008 and to 0.2 in 2009. Real investment and exports fell even more. The rate of unemployment rose from 3.0 % in 2007 and 3.2% in 2008 to about 4.1% in 2009, but was very distant from the 7% of 1998, also because the social safety net of EIS (Employment Insurance System) had been in the meantime greatly extended and reinforced [35]. While in 1998 Korea had to borrow funds from IMF and so its monetary policy had to be highly restrictive following the conditions imposed by IMF, in 2008 the monetary policy was relatively accommodating[36]. Thus nominal rates of interest did not increase so dramatically as in 1998 and did not excessively disrupt investment and balance sheets of enterprises.

Although the 2008-9 crisis has been, for South Korea, much less profound than the 1997-8 crisis, it will probably have long-lasting consequences. It will most likely tend to further strengthen the economic interconnections among big Asian countries, both through trade and through FDI. Many Koreans can speak Japanese or Chinese and some English and are, as Taiwan, in good condition to try using Japanese machines and components and Chinese workforce in order to conquer world markets, but in particular the huge markets of China, Japan and Indonesia. South Korea can also aspire to overtake, in some selected fields, the Japanese, German and US's supremacy for several components and sophisticated machines, trying also to maintain its present leadership on China and India for chips and various high-tech mass- consumer goods.

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[34] Stabilization was possible after the announcement of a bilateral swap agreement up to 30 billion dollars made between Korea's Central Bank and the US Federal Reserve.

[35] See Kim Sung Teak (2010)

[36] ibidem, pp. 17-18.

However, due to the structural decline in manufacturing employment, it would be necessary a better performance also in services, and especially in exportable services, which at present tend to have a relatively low and almost stagnant productivity[37].

9. Concluding remarks

South Korea's economy has achieved a great economic development in the 1953-2010 period obtaining democracy since 1987 and overtaking dramatic social –political tensions and two major economic crises in 1997-8 and in 2008-9. However, the pace of growth has decelerated since 1999, youth employment problems and income inequalities have worsened, the problem of the division between North and South Korea has not been overcome. The powerful educational and innovative drive of the country has continued to feed the vast engine of growth, but the ageing of population, the rise in relative poverty, the poor dynamics of the tertiary sector and the increasing pressure of emerging countries in a globalizing world risk deteriorating Korea's competitive edge and the job opportunities of its younger generations.

[37] See Kim Joon -Kyung , Lee Chung H. (2009), pp. 4-5.

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Main historical facts in South Korea: 1948- 2010

1948	Division of Korea in two parts: South-Korea under the authoritarian government of Syngman Rhee, and North Korea, under the communist regime of Kim Il -Sung)
1950-53	Korean War: the North, helped by Soviet Union and then China, invades the South, military helped by the USA and other UN countries. The armistice, not signed by South Korea, concludes a war with over 2.5 millions victims.
1953- 60	President Syngman Rhee contributes to the recovery of the economy , but seriously limits civil rights and represses political opposition. He has to resign in 1960 after a student uprising.
1960-61	Political instability.
1961-79	Military coup of the general Park Chung -hee who remains at the power until his assassination in 1979. He contributes to the rapid industrialization and economic growth of the country, but brutally represses political opponents.
1979-80	Political turmoil under the weak interim presidency of Choi Gyu-ha.
1980 - 87	Another military coup brings to the power general Chun Doo-hwan, who assumes the presidency and continues the repressive policy, allowing in 1980 the massacre of 207 exponents of the democratization movement in the city of Gwangju and the torturing and killing of Park Jong Chul, a SNU student., in 1987. The ensuing protests lead to the June 29th 1987 Declaration issued by Roh Tae-woo, leader of Chun"s party, the democratic justice party , which contemplates a direct popular election of the president.
1987- 92	Roh Tae-woo (DJP -Democratic Justice Party) wins the presidential election with a small margin. In 1980 Seoul hosts the Summer Olympic games. In 1996 South Korea enters OECD. Rapid economic growth continues.
1993-1997	President Kim Young Sam (DLP - Democratic-Liberal Party) contributes to the continuation of rapid economic growth, but also to the financial and structural problems which lead to the Korean involvement in the great 1997 Asian financial crisis. In 1994 there is the death of Kim Il Sung and his son seizes the power in North Korea.
1998-2002	President Kim Dae-Jung (MDP- New Congress for New Politics) , progressive leader, formerly jailed and exiled by authoritarian governments, opens to North Korea with his "sunshine policy" and obtains the Nobel peace Prize in 2000. He makes economic reforms and favours a relatively rapid economic recovery after the severe 1997-8 financial and real crisis. Korea co-hosts with Japan the world soccer cup.

	Continuation of economic growth, but at a lower speed than in the pre-1997 years.
2003-2007	President Roh Moo-hyun (MDP- Millenium Democratic Party). Continuation of economic growth. Attempt at decentralization and a transfer of the capital city , or at least its administrative offices, towards the center-south of the country.
2008-	President Lee Myung-Bak (GNP - Grand National Party). A conservative party returns to power. Among Lee's projects there is the controversial building of a great canal crossing the country and further liberalization in external economic relations. The global crisis hits also Korea's economy, but less than in the US and Europe. The policy towards North Korea becomes tougher and less conciliatory.

Statistical appendix

A1 Selected macroeconomic indicators- 1 : South Korea 1972-2009

Year	Population (millions)	GDP in PPPs*	Per capita GDP in PPPs**	Employment (millions)	Annual hours per employeee	Productivity GDP in PPPs / Employment **
1972	33.505	82.304	2.456	10.379	2.538	7.930
1973	34.073	96.231	2.824	10.942	2.583	8.795
1974	34.692	104.605	3.015	11.421	2.633	9.159
1975	35.281	111.548	3.162	11.691	2.653	9.541
1976	35.860	124.664	3.476	12.412	2.733	10.044
1977	36.436	137.531	3.775	12.812	2.703	10.735
1978	37.019	150.442	4.064	13.412	2.733	11.217
1979	37.534	161.172	4.294	13.602	2.718	11.849
1980	38.124	156.846	4.114	13.683	2.703	11.463
1981	38.723	166.581	4.302	14.023	2.688	11.879
1982	39.326	179.220	4.557	14.379	2.803	12.464
1983	39.910	199.828	5.007	14.505	2.778	13.776
1984	40.406	217.167	5.375	14.429	2.758	15.051
1985	40.806	231.386	5.670	14.970	2.758	15.457
1986	41.214	258.122	6.263	15.505	2.698	16.648
1987	41.622	287.854	6.916	16.354	2.773	17.601
1988	42.031	320.301	7.621	16.869	2.788	18.988
1989	42.449	340.751	8.027	17.560	2.733	19.405
1990	42.869	373.150	8.704	18.085	2.688	20.633
1991	43.340	408.200	9.419	18.623	2.672	21.919
1992	43.837	432.185	9.859	18.985	2.650	22.765
1993	44.307	458.694	10.353	19.211	2.667	23.877
1994	44.719	497.851	11.133	19.829	2.651	25.107
1995	45.105	543.499	12.050	20.397	2.658	26.646
1996	45.468	581.536	12.790	20.838	2.648	27.907
1997	45.808	608.583	13.286	21.201	2.592	28.705
1998	46.152	566.868	12.283	19.920	2.496	28.457
1999	46.485	620.643	13.351	20.275	2.502	30.611
2000	46.839	673.312	14.375	21.137	2.520	31.855
2001	47.178	700.066	14.839	21.557	2.506	32.475
2002	47.437	750.120	15.813	22.151	2.465	33.864
2003	47.657	771.145	16.181	22.116	2.434	34.868
2004	47.854	806.764	16.859	22.533	2.404	35.804
2005	48.005	838.689	17.471	22.832	2.364	36.733
2006	48.124	882.122	18.330	23.131	2.357	38.136
2007	48.250	927.162	19.216	23.417	2.316	39.593
2008	48.379	947.555	19.586	23.561	2.256	40.217
2009	48.509	920.040	18.966	23.450	2.259	39.234

* in millions 1990 US $ in PPPs; ** in 1990 US $ in PPPs.

Sources: Conference Board- GGDC (2010), Song (1990), pp. 60-1; OECD (2010 b).

A2 Selected macroeconomic indicators- 2 : South Korea 1972-2009

Years	Unemplomentrate	Inflation rate	Nominal effective exchange rate 2000=100	Current account balance as % GDP	Real GDP rates of change
1972	4.5	16.1	287.4		4.5
1973	4.0	13.4	257.9		12.0
1974	4.1	29.5	266.3		7.2
1975	4.1	25.7	223.9		5.9
1976	3.9	20.7	215.0		10.6
1977	3.8	15.7	183.5		10.0
1978	3.2	21.9	185.6		9.3
1979	3.8	21.2	151.6		6.8
1980	5.2	25.6	160,1		- 1.5
1981	4.5	15.4	139.2		6.2
1982	4.4	6.7	142.0		7.3
1983	4.1	3.9	136.1		10.8
1984	3.8	3.8	136.0		8.1
1985	4.0	4.1	129.7		6.8
1986	3.8	2.7	107.1		10.6
1987	3.1	3.0	104.5		11.1
1988	2.5	7.1	112.3		10.6
1989	2.6	2.7	129.7		6.7
1990	2.4	8.6	125.9	-0.8	9.2
1991	2.4	9.3	121.5	-2.7	9.4
1992	2.5	6.2	113.2	-1.2	5.9
1993	2.9	4.8	111.5	0.2	6.1
1994	2.5	6.3	112.8	-1.0	8.5
1995	2.1	4.5	113.2	-1.7	9.2
1996	2.0	4.9	115.0	-4.1	7.0
1997	2.6	4.4	106.4	-1.6	4.7
1998	7.0	7.5	77.0	11.7	-6.9
1999	6.3	0.8	88.4	5.5	9.5
2000	4.1	2.3	94.7	2.4	8.5
2001	3.8	4,1	87.5	1.7	3.8
2002	3.1	2.7	90.4	1.0	7.0
2003	3.4	3.6	89.8	2.0	3.1
2004	3.5	3.6	89.8	4.1	4.7
2005	3.5	2.8	100,0	1.9	4.2
2006	3.3	2.2	107.8	0.6	5.1
2007	3.2	2.5	107.2	0.6	5.1
2008	3.2	4.7	86.5	-0.4	2.2
2009	3.6	2.8	73.5	5.1	0.2
Sources: OECD (2009) e (2010 b) ; Bank of Korea; Economic Planning Board.					