

Historical Transformation and Prospects of the Korean Economy*

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1. Introduction

Korea has been transformed from a closed, low-income agricultural economy in the 1960s to a high-income open diversified, and growing economy. Korea is no longer poor or closed economically. The Korean economy is linked to the world economy which is rapidly progressing skills- and knowledge-based technological change. Korean society has become freer and more democratic.

Korea used to be a small poor closed agriculture-based economy. Per capita GDP value was only \$121 by 1962. In 2007 it had reached \$20,220 per person. Thus it has experienced miraculous growth over a short four decades. This paper attempts to describe how Korea shifted from its poor agricultural base to the advanced industrial economy, followed by the presentation of per capita GDP, production and employment structure, education, and total factor productivity growth. We ask what factors lay behind Korea's economic success. In addition, this paper addresses the appropriate economic policy for Korea in a high-tech skill world and the likely challenges that Korea will need to confront in the 21st century.

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2. Policy Focuses under Different Regimes

Numerous books and articles have been reported on the subject of the development of the Korean economy.¹⁾ This section does not provide the full documentary details of the development process of the Korean economy and it does not spell out the fiscal and monetary policy measures implemented in details.²⁾ It does not directly discuss the history of Five Years Plans of Economic Development.³⁾ It does offer characteristics of phases under different regimes through which the Korean economy have transformed during the last fifty years, 1962-2007.

We divide the past fifty years into four different regimes named for the President that contributed to the transformation of the Korean economy. We list the four different regimes with the main characteristics as follows: a. 1962-79 Regime of President Park, Chung Hee, Big Push; b. 1980-92 Regime of President Chun, Doo Hwan, and Rho, Tae Woo, De-Regulation and Trade Liberalization; c. 1993-97 Regime of President Kim, Young Sam, Financial Liberalization and OECD; d. 1998-2007 Regime of President Kim, Dae Jung, and Rho, Moo Hyun, Opening and Globalization.⁴⁾

We argue that Regime of President Park, Chung Hee initiated the development of the economy and determined the course of Korean economic and social development in the latter years. The succeeding Regimes of President Chun, Doo Hwan, and Rho, Tae Woo, President Kim, Young Sam and President Kim, Dae Jung, and Rho, Moo Hyun contributed the Korean economy to become an open and global economy though opening of trade and capital markets.

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- 1) For the professionals and public who are interested in the Korean economy, books listed below supply different points of views and analysis by policymakers and professional analysis: Cha, Dong-Se, Kwang Suk, Kim, Dwight H. Perkins, ed, (1997), Cho, Soon, (1994), Hong, Wontack, (1994), Kim, Chung-yum, (1994), Korean Federation of Industries, ed, (1986), Kwack, Sung Yeung, ed, (1993), Kwack, Sung Yeung, (1990), and Nam, D. W., (1997).
 - 2) For chronological collection of the policy implemented in Korea, see Korea Development Institute (1995). For a fuller and detailed description of major fiscal and monetary policies, see Koh, Young Sun (2008). For a chronology and major implemented monetary policy measures, see the Bank of Korea (2000) and Kim, Kyung Soo and Lee, Jaewoo (2010).
 - 3) Economic Planning Board (1982, part 3, pp. 358-393), Korean Federation of Industries, ed, (1986, part 1, pp. 26-120) and Kang, Kwang Ha (2000).
 - 4) This division is made largely on the basis that individual Presidents implemented policies to reflect their main goals. Similar periods are utilized by Kim, Kyung Soo and Lee, Jaewoo (2010) and Koh, Young Sun (2008).

2.a 1962–79 Regime of President Park, Chung Hee, Big Push⁵⁾

Prior to 1960, Korea was still a small closed agriculture-based economy. Per capita GDP was only \$121 by 1962.⁶⁾ Serious hunger and employment problems led to public despair, leading to anarchy as the civilian government lost direction and the capacity to improve conditions. In the midst of the national crisis, General Park Chung Hee took power through a military coup in 1961. His goal was to rescue the national economy and to ensure national security. His immediate goal was to bring Korea out of poverty, anger, and hopelessness.

The Korean economy came to play the central role in the nation's reconstruction. When the government launched its first five-year development plan in 1962, Korea for the first time in its history emerged onto the world economy. The new government initiated a program called the Saemaul Movement (New Village Movement) to reconstruct rural areas, playing a major role, for example, in providing dams for flood protection, in reforestation denuded hills and mountains, and in procuring heavy earth-moving machinery to irrigate, grade, improve, and bring new lands under cultivation or consolidate dispersed holdings.⁷⁾ The government also built access roads and brought electrical power to villages that had never had them before. Farmers were provided with tractors to replace the old cow-drawn plow and canals were built to supply drought afflicted areas. Very little corruption was seen, and the entire nation people felt enthusiastically supported and took great pride in the national effort.

In 1965, the government relaxed the control of the financial system. In 1972, the government took an emergency measure which included a moratorium on loan in the informal market. It launched the third five-year development plan, the aim of which was to develop in order to strengthen the national defense and make Korea's industries more technology-intensive. The class of businessmen and those in technical profession were belong to the less respected classes in the society. Industries were not well equipped with expertise with knowledge of specialty while the government had recruited a large number of well educated and practical experts. It mobilized capable groups of larger scale firms, which were called as Chaebol group, to run the heavy and chemical industry. The government provided technical and financial

5) This part draws on Chapter 7, section 1 of Kwack and Lee (2010, pp. 685-687). The period of this phase includes the First, Second, and Third Five-Years Plans of Economic Development.

6) See Cho (1994) and Nam (1994).

7) See Kim (1994) and Park (2006).

resources.⁸⁾ Government policy-makers and personnel provided direction and guidance to the firms selected. The low interest rate policy and government subsidy to investments had the effect of encouraging a capital-intensive method of production. The heavy and chemical industry is an industry with the economies of scale. Korea's own market is small and thus, the foreign market determines the course of the industrial development. As a result, outward-looking export-promotion strategies with big Chaebol groups became central to the government's development plan.⁹⁾ The development plan also brought the expansion of government-supported research institutes to supply the needed technical guidance and the expansion of education programs to supply the needed manpower and skills. The government plans under the Park's regime established the course of Korean economic and social development in the latter years.

2.b 1980-92 Regime of President Chun, Doo Hwan, and Rho, Tae Woo, De-Regulation and Trade Liberalization¹⁰⁾

In 1977, Korea attained its exports of \$10 billion. In the latter part of 1970s, particularly from 1977, the economy experienced excess demand and a speculative boom in real estate including housing and apartments. The government focused on price stability by implementing a tight fiscal policy. Owing to three lows-low oil price, low interest rates and low Korean won, the current account was in a surplus. Trade openness was expanded and imports were flexibly permitted. Government activated market functioning, opening of the economy and began to privatize banks and liberalize interest rates in the early 1980. Still bank interest rates and banks were under administrative control of the government.

2.c 1993-97 Regime of President Kim, Young Sam, Financial Liberalization and OECD

Interest rates were liberalized in the 1990s. International capital flows were freed up gradually and the ceiling on short-term foreign currency borrowings by banks was lifted in 1994. Korea applied for an OECD membership on March 1995 and became

8) See Oh (2006), and Stern, Kim, Perkins, and Yoo (1995, chapters 1-3, 1-61).

9) See Scitovsky (1986) for the comparison between Korea and Taiwan.

10) In this period, the Fourth and Fifth Five-Years Plans of Economic Development were carried out.

a member of OECD on December 1996. Korea met the conditions for OECD member with regard to financial and monetary markets. Financial liberalization and international capital liberalization allowed borrowers to take excessive risk and led to weaknesses in the balance sheet of financial institutions as well as big business corporations. The capital flow liberalization concluded with a financial crisis.¹¹⁾

2.d 1998–2007 Regime of President Kim, Dae Jung, and Rho, Moo Hyun, Opening and Globalization

Continuous growth and globalization are accompanied by a worsening distribution of income and rising wage earning inequality. This regime tried to prevent the distribution of income from worsening. President Kim recovered the Korean economy from the financial crisis. As a result, the role of the private sector in the economy became greater and the Korean economy turned into a more globalized economy. President Rho proposed Korea-US Free Trade Agreement.

3. Main Causes for Korean Economic Success and Miracle¹²⁾

Most economists and analytics agree in attributing Korea's remarkably rapid growth to the nation's rapid export growth. While economic growth is the ultimate target of policies to be attained by the implementations of policies, the export growth is considered as intermediate policy targets rather than a policy tool. There is a view that government interventionist or industrial policies are a powerful basis for growth if prices are set right.¹³⁾ Industrial policies in Korea established a favorable environment for investment.¹⁴⁾

What factors lay behind Korea's economic success? There were many.¹⁵⁾ We identify four which we consider the most important. First, the world economic environment and free trade facilitated Korean trade. The United States was engaged in the cold war with the Soviet Union and was eager to assist friendly developing countries in Asia. New technologies were made readily available to Asia including Korea.¹⁶⁾ Korea

11) Bhagwati (2004) is a well-known advocate for free trade, but opposed the opening of international short-term capital markets.

12) This part utilizes Chapter 7, section 1 of Kwack and Lee (2010, pp. 687-689).

13) See Amsden (1989).

14) See Rodrik (1994).

15) See Hong (1994, pp. 3-24).

16) On January 2, 1959, the Soviet Lumik 1 spacecraft breaks free of Earth's gravitational pull. The

under the President Park Chung Hee seized the opportunity. Korea benefited from the advantages of being a latecomer. But, Korea was not a later comer in the world, as many countries failed to take the opportunity.

Secondly, President Park Chung Hee mobilized Korea's resources for national reconstruction. His pushed for Seoul-Pusan Express Highway and Pohang Iron & Steel Company, two notable examples of his initiative and determination. Park Chung Hee wrote that "I had to break, once and for all, the vicious cycle of poverty and economic stagnation." The leadership inspired the government bureaucrats and Korean people to come together in making Korea a nation without 'hunger'.¹⁷⁾ Schuman (2009) emphasizes the role of his leadership in the economic miracle in Korea.¹⁸⁾

Thirdly, Koreans enthusiastically desired to attain greater education levels and practical skills. The government, therefore, implemented the expansion of educational institutions including the university system. The increased stock of human capital and skills satisfied the demand for expanded labor input.

Fourth, the government implemented policies to open the economy. Korea undertook imitating to catch up to the technology level of the leaders. As a follower in early 1960, Korea utilized its imports of capital goods and intermediate materials from technologically advanced countries to build up its production capability. The efficient use of imported technology in the improvement and modification in product design was made possible by Korean workers who attained a high education level. As its technological capabilities rose, Korea increased investment in R&D activities and human resource development and lowered its trade barriers to generate innovations and to acquire new technologies.¹⁹⁾

flight of the Lumit set off the breakdown of barriers in space, and speed. According to Kaplan (2009), "1959 was the year when the shockwaves of the new ripped the seams of daily life, when humanity stepped into cosmos and also commandeered the conception of human life, when the world shrank but the knowledge needed to thrive in it expanded exponentially, when outsiders became insiders...-when the world as we know now it began to take form."

17) See Kim (1994) for the discussion of non-economic factors. The deriving force is made by 'han'-unsatisfied desire or deep rooted grudge.

18) See Schuman (2009, chapter two). He describes in details the miracle of individual countries in Asia including Korea. In Introduction, he discusses the question of what really caused the Asian economic miracle. He emphasizes the role of Asia's leaders who made the hard, but correct, choices in favor of globalization. The Asia's leaders are Lee Kuan Yew in Singapore, Chiang Kai-shek in Taiwan, Park Chung Hee of South Korea, Deng Xiaoping in China, Manmohan Singh in India and Mahathir in Malaysia.

4. Main Transformation Indicators

4.1 Per capita GDP in US dollar

Over Korea's modern period, the per capita GDP of Korea has grown rapidly. The average value of per capital GDP in U.S. dollar is \$949 during the 1962-1979, up to \$4627 during the period 1980-1992. (see Table 1). The average value of per capita GDP is \$9803 in 1993-1997 and rises to \$15620 during the 2000-2007. The growth rate of Korean GDP value per person is higher than the growth rate of foreign GDP value per person.

<Table 1> Nominal Value of GDP in U.S. Dollar per Person

Period	Average Value
1962~1979	949
1980~1992	4627
1993~1997	9803
1998~1999	8605
2000~2007	15620

Bank of Korea, National Accounts.
IMF, WEO Macro-Database.

<Table 2> The Composition of Manufacturing Industry Value Added by Light and Heavy and Chemical Industries

Year	Total (billion)	Light Industry (%)	Heavy and Chemical Industry (%)
1970	17.8	59.4	40.6
1975	21.6	50.4	49.6
1980	24.4	41.9	58.1
1985	27.3	36.3	63.7
1990	27.3	29	71
1995	27.6	23.4	76.6
2000	29.4	20.7	79.3
2005	28.4	15.3	84.7
2007	27.9	14.1	85.9

Bank of Korea, <http://ecos.bok.or.kr>.

19) There are numerous studies on the process of catch up by Korea. Among them, are the study by Pack and Westpal (1986), Nelson and Pack (1999), and Timmer (2003).

4.2 Production and Employment Structure

The share of output in heavy and chemical manufacturing increased from 40.6 percent of total manufacturing output in 1970 to 85.9 percent in 2007. (see Table 2).

〈Table 3〉 Composition of Real GDP by Industry

Period	GDP	Agriculture Mining	Mfg	EGW	Construction	Service
1962~79	87153.9	19.7	14.7	0.7	8.6	56.3
1980~92	255165.5	9.6	21.9	1.7	11.0	55.9
1993~97	458625.3	6.3	24.2	2.2	11.7	55.6
1998~2007	642620.3	4.6	30.3	2.7	8.8	53.7

The figure of industry is a percent of real GDP in 2000 billion won.

EGW is electricity, gas, and water supply.

Mfg is manufacturing.

〈Table 4〉 Composition of Total Manufacturing Real GDP by Sub-Industry

Period	Total	FTWF	PNMM	MEP	TE
1962~79	12839.0	59.2	28.1	8.6	4.1
1980~92	55772.2	40.4	36.6	14.7	8.3
1993~97	110992.9	27.6	39.5	21.2	11.7
1998~2007	194597.5	15.3	32.3	41.0	11.4

The figure of sub-industry is a percent of total manufacturing GDP.

FTWF refers to foods, beverages, textiles, wood, pulps, and furniture.

PNMM refers to petroleum, chemicals, non-metal and metal products.

MEP refers to machine, electrical equipment, and precision instruments.

TE refers to transport equipment.

The Korean structure of production has shifted from agriculture and mining to manufacturing. The share of manufacturing in real GDP was 14.7 percent during 1962-1979 and reached 30.3 percent during the period of 2000-2007. (see Table 3). The manufacturing sector shifted toward skills-bias and knowledge intensive sub-sectors. The share of machines and equipment manufacturing in GDP to total manufacturing output rose from 36.7 percent in the period of 1962-1979 to 73.3 percent in the period of 1998-2007. (see Table 4). The trends of employment indicate that Korea's production shifted from the primary sector (agriculture, forestry, fishing, mining and quarrying) to the service sector. As shown in Table 5, employment in

agriculture and mining was 59 percent of total employment in 1966 and decreased to 9 percent in 2007. In contrast, employment in manufacturing and construction (secondary sector) increased from 12 percent in 1966 to 27 percent in 2007. Strikingly, the share of employment in the service sector rose from 29 percent in 1966 to 64 percent in 2007.

<Table 5> Trends of Employment by Three Broad Sectors

Year	1966	1990	2007
All Industries	8618	15889	18784
Primary sector	5095 0.59	2960 0.19	1766 0.09
Secondary sector	1028 0.12	5556 0.35	5024 0.27
Tertiary sector	2495 0.29	7373 0.46	11994 0.64

Employment figures are in thousand.

The figure under the employment figure is a fraction of the total employment in the year.

<Table 6> Trends of Educational Distribution (in fraction)

	All Industries	Primary	Secondary	Tertiary
1966				
Primary and below	0.71	0.74	0.69	0.67
Middle School	0.18	0.21	0.09	0.15
High School	0.07	0.05	0.09	0.11
Jr. College	0.01	0.00	0.02	0.03
University and above	0.03	0.01	0.09	0.04
1990				
Primary and below	0.29	0.50	0.27	0.23
Middle School	0.21	0.36	0.19	0.17
High School	0.38	0.13	0.44	0.43
Jr. College	0.04	0.01	0.04	0.06
University and above	0.08	0.01	0.05	0.12
2007				
Primary and below	0.13	0.41	0.11	0.09
Middle School	0.11	0.35	0.09	0.08
High School	0.41	0.18	0.50	0.41
Jr. College	0.11	0.02	0.09	0.13
University and above	0.24	0.03	0.20	0.29

4.3 Educational Composition of Employed Labor

Table 6 shows the trends of the distribution of workers by educational attainment in Korea. About 74 percent of the workers of the primary sector in 1966 attended no more than primary school, falling to 50 percent of workers in 1990 and 41 percent in 2007. In the secondary sector, about 69 percent of workers in 1966 attended the primary school and below, about 27 percent in 1990 and about 11 percent in 2007. The educational level of workers in the tertiary sector has been rising rapidly. Primary school graduates among workers have declined from 67 percent in 1966 to 9 percent in 2007. The share of the workers that graduated from jr. college and higher school was steadily increasing. The workers who graduated from college and higher are the second largest group in employment.

4.4 Growth of Total Factor Productivity(TFP)

TFP growth may be affected by R&D investment and technological catch-up efforts. Korea promoted R&D investment and foreign technology borrowings in the middle of 1980. Thus, TFP growth is expected to show an upward trend. Using the standard neo-classical growth accounting framework, the growth in GDP can be decomposed into two factor inputs and TFP.²⁰⁾ The growth rate of aggregate GDP is a weighted average of growth rates of GDP by industries, and the weights are relative GDP value shares. Table 7 shows the results of decomposition in the growth in the economy-wide output. Capital stock is the main source of the economic growth. The contribution by the capital stock to economic growth has been high, but at a declining rate: 75% in 1961-1970, 76% in 1971-1984, 61% in 1985-1996, and 46% in 2001-2007. The capital contribution declined. The contribution of labor hours has declined in the 1961-2007 period: 24% in 1961-1970, 23% in 1971-1984, 17% in 1985-1996, and 18% in 2001-2007. The rate of TFP contribution to GDP growth has increased considerably in recent years: 1% in 1961-1970, 2% in 1971-1984, 22% in 1985-1996, and 36% in 2001-2007. The TFP contribution rate rose in the period 2001-2007. Korean GDP growth in 2000s was greatly attributed to Korean TFP growth.²¹⁾

20) Data sources and detailed discussion are given in Chapter 5 of Kwack and Lee (2010, pp. 594-644).

21) The TFP estimate differs from the available estimates given notably by Pyo Hak Gil.

<Table 7> Capital Stock, Labor Hours, and TFP Quantity Growth

	Average Growth Rates of:			
	GDP	Capital stock	Labor hours	TFP quantity
1961~1970 (ratio to GDP)	9.80	7.37 0.75	2.36 0.24	0.07 0.01
1971~1984 (ratio to GDP)	8.16	6.18 0.76	1.85 0.23	0.13 0.02
1985~1996 (ratio to GDP)	8.19	4.99 0.61	1.39 0.17	1.81 0.22
1997~2000 (ratio to GDP)	3.77	2.71 0.72	-0.40 -0.11	1.46 0.39
2001~2007 (ratio to GDP)	4.46	2.05 0.46	0.79 0.18	1.62 0.36

The growth rate of GDP is a weighted average of industrial growth rates.

Relative GDP value shares are weights.

TFP quantity refers to TFP measured with capital stock and labor hours worked.

5. Economic Policy in the World of Globalization and Education

Korea's development framework was the framework of industrial policy to pick winners by the government. It was very effective in the early stage of development. However, Korea's strategy for the present and forthcoming stage of modern development is to 'go for higher growth through human capital'. The human capital strategy is consistent with on-going skill-biased technological progress. This technology makes physical capital and skilled labor complementary to each other and lowers demand for less-skilled workers. Hence the key for preventing rising inequality while promoting growth is raising the knowledge and skills of all workers. Education, research & development, and health are the most effective means to realize human capital enhancement.²²⁾

5.1 Misguided View on Education in Korea

Most Koreans believe they are better educated and claim that we are number one

22) See Botticini and Eckstein, (2005). Jewish comparative advantage in urban, skilled occupations and their distinctive academic mark are credited to their widespread literacy prompted by a religious and educational reform in Judaism in the first and second centuries CE. Study is the only undisputed and shared value upon which all Jews, regardless of affiliation or belief, can agree. Knowledge of Torah and Talmud are considered a virtue second to none.

in the world. On average, the level of Korean education and skills is good enough for workforce to work in the production of goods and services. It may be enough for professionals to imitate the existing knowledge and technologies. It is not far enough for working with or fostering new ideas and innovation of originality in Korea.

5.1.a Quantity in Korean Education

The quantity of education in Korea was limited until the government of Korea expanded its education system including enrollment in the 1960s. Thereafter, the numbers of graduates in the high school and college rose rapidly. Using the data from the Korean survey of population aged 6 years old and above, we computed Korea's educational accomplishment. Prior to 1958, less than 1 percent of the population had attended university. It had risen to 5.7 percent in 1985, and to 21.9 percent in 2007. The average period-of-schooling was 6.3 years in 1957, 9.3 in 1985, and 11.5 years in 2007. While these statistics show significant gain in the levels of educational attainment in terms of years of schooling, these data do not take into account the quality of education.

5.1.b Quality in Korean Education

According to IMD (2008), the percent of Koreans age group of 25-34 with college and university degrees ranked the 4th among 55 countries. However, Korea's university education-in terms of its quality-ranked the 53th of all. Korea's skilled labor ranked the 43th, compared to 7th rank for the United States, 6th for Japan, 40th for China, 12th for Hong Kong, and 8th for Singapore. Although we may question about the data the IMD used in its ranking, the report nonetheless clearly indicates that there is substantial room for improvement in the quality of education in Korea.

5.2 Improvement in Korean Education

5.2.a Education of Poor Family Children

Human capital or knowledge has accumulated over time and spread from generation to generation. Low human capital from a poor family at present will transfer low human capital to the next generation. Early childhood education of low income family in the home is quite inadequate. In light of inter-generational transfer and poor childhood education, the focus is to give the children of low income households

access to high quality education and training from the elementary school by providing financial support.

5.2.b Increased Spending on Education by the Government and Large firms

The share of education in household income is high. However, the share of the government in education and research is small. Moreover, little support of education and research is given by the Chaebol and large firms is surprisingly small, in contrast to the contribution of U.S. firms. This is a rather strange in light of the fact that Chaebol and large firms depend on the workers educated from the schools and universities. In their own interest, the government and large firms should raise their spending for education and research and development.

5.2.c Pay more to Teachers

Schools need to pay teachers more to attract the better-trained and dedicated professions in schools from primary schools to university level. The government should reform Korea's current incentive system to a system that provides pay incentives for faculty in research university institutions to devote on in-depth teaching and doing research.

6. Issues and Problems Ahead

6.a Korea's competitiveness

In recent years, there has been foreign competition to supply the main products exported by the Chaebol like cars, consumer electronics, machinery, ships, iron, and steel. The main characteristics of Korea's main exports are: (a) The technology in their production is general, rather than specific or specialized. Hence, the cost of production is highly sensitive to the cost of the labor input; (b) The profit margin on consumer electronics has been rapidly lower. China and India have started to produce cheap small cars, and China has been constructing big shipyards and steel plants. Korea will face a rough road in sustaining its export growth.

6.b Diminishing Job opportunity

In the early 1970s, "Made in Korea" indicated that the products were made by Korean workers using Korean technology and raw materials. The export of "Made

in Korea” products led to growth in output and employment in Korea. However, from the 1990s, the big Korean firms started operating as multinationals. They started to import intermediate products and components from abroad and to assemble them to make “Made-in-Korea” products. Because of this rising use of foreign-made intermediate products and components, the exports of “Made-in-Korea” products do not contribute to the growth in output and employment as much as they did. According to the *Input-Output* tables constructed by the Bank of Korea, the total employment effect per unit the exports of one billion won at the price of 2005 was 24 persons in 1995, 10.8 persons in 2005, and 9.4 persons in 2007.

In view of the importance of employment for both economic and social stability, the focus of economic policy needs to be on ways to increase employment. The government should create incentives for the young to undertake new innovative projects and should supply tax credit/subsidy for the employment of young college graduates. The government provides financial assistance and tax credit to modernize neighbor-friendly traditional local markets. Stores in local markets provide lower prices of goods and labor-intensive stores, providing employment opportunities.

6.c Widening Gap in Income and Wage Earnings

Using the data from 1965 to 2007, we computed the two measures of the distribution of gross income, the Gini coefficient and the ratio of top X group to bottom I group.²³⁾ The Gini coefficient rose from 0.28 during the period 1965-1969 to 0.28 in the mid-1990s and to 0.31 in the 2000s. The X/I decile dispersion ratio for income was 7 in the 1990-97 period. After the financial crisis, it rose to 8.9 in 2006-2007. As the Korean production structure has shifted to a skill-intensive structure, a rise in the demand for output by the openness and capital stock leads to widening income and wage inequality. A rise in labor force skills prevents wage inequality from widening between the skilled and unskilled. Hence, the policy to increase the supply of skill is necessary for the improvement in the distribution of income as well as for the economic growth.

6.d Discrimination in pay between regular and temporary workers.

There are labor as well as political issues in Korea between regular workers and

23) This part is based on Kwack (2010) and Chapter 6 of Kwack and Lee (2010, pp. 645-683), an extension of the study of Katz, L., and Murphy, K. (1992).

temporary or irregular workers. As of March 2010, the number of regular employee out of the total employees is 8.333 million, about 51.2 percent of the total.²⁴⁾ The irregular employee numbered 8.282 million. The hourly wage rate of regular employee is 14372 won and the hourly rate of irregular employee is 6826 won, about 48 percent of regular employee's rate. In addition, most of irregular employees do not receive health and retirement benefits regular employees entitled. In the world of internet, the flexibility of working hours and conditions of workers is needed to take care of households need such as child care. But, regular and irregular workers should receive an equal pay for the equal work. This is not the case in Korea. Hence, Korea must find a way to ensure the equal treatment.

6.e Openness within Korea

The openness to trade of a country can be measured in terms of either quantity or price, using the dual character. The standard measure of the openness in terms of quantity is the ratio of export volume to real GDP or the ratio of the sum of export and import volume to real GDP. The openness of Korea is very high by this measurement. The alternative measurement of openness is the comparison of prices of goods at home and abroad. It is very difficult to compare the price levels between two countries, as example, the level of price of an aggregate good in Korea with the level of its prices in the United States. Farm products are relatively homogenous, and the prices of farm products in Seoul, Korea and Washington, USA are readily available. A unit of Chinese cabbage in Seoul is about \$5, whereas the unit of Chinese cabbage in a Korean supermarket in Maryland is \$0.6, about 12 percent of the prices in Korea. The price of one apple is \$1 in Seoul, whereas the price of one apple in Maryland is \$0.7. A necktie of a well known brand in Macy store in Maryland is \$40, whereas its price in 'Apgujungdon' Hyundai store in Seoul is \$150. The price information may be not precise. Nevertheless, these indicate that the price level of most goods in Korea is much higher than in the United States and that the gains from trade are not broadly shared by Korean consumers. Korea's government should take measures to import more consumer goods so that working people in Korea will share in the gains from trade.

24) The data are from Kim, Yoo Sun (2010), "Status of Irregular workers", 2010-07, Korea Labour & Society Institute, Seoul, Korea; <http://klsi.org>.

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