

**EMPLOYMENT
PAPERS**

11

**Integrated human resources
development planning:
The case of the Republic of
Korea**

Daechang Lee
Kia Economic Research Institute, Seoul

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Foreword

This study evaluates the Republic of Korea's public policies related to human resources development planning at national and industrial levels. It starts with a brief overview of the Republic of Korea's economy and the evolution of its industrial/trade policies since the early 1960s. It then looks at recent strategies aimed at strengthening national competitiveness and the relationship of those to human resources development planning.

The current state of the labour market and labour relations in the Republic of Korea is examined, public policies aiming to create more jobs and to enhance the international competitiveness of human capital are evaluated, and an assessment is made of how well the Republic of Korea's labour market policies work. The study shows that industrial growth in the Republic of Korea was engendered by positive public policies and subsidies which allowed companies to increase their exports, upgrade their technology and train their workers.

This study further provides case studies on the car and textile industries. This provides readers with more detailed information on growth and competitiveness as well as on human resources development planning and practices in each industry. The case studies point to an integrated system of industrial planning and upgrading of the labour force, in both industries, to remain competitive. This was carried out by companies rather than by public vocational training schemes.

This study forms part of a larger project on human resources development, employment and labour market policies jointly conducted by Jacques Gaude of the Training Policies Branch and Rolph van der Hoeven, Head, Employment Planning and Policies, at the Employment Strategies and Policies Branch.

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1. The Republic of Korea's long-term economic development policies and recent strategies to strengthen competitiveness

1.1 Industrial structure and industrial policies

Rapid economic growth in the Republic of Korea began in the 1960s. The economic policies of the 1960s aimed at industrialization and increased exports. The national economy depended heavily on agriculture at that time: the share of total GDP originating in the agricultural sector amounted to 37 per cent in 1960. Annual per capita income was below US\$100 in that sector. If the nation was to develop, economic policies had to put a great emphasis on fostering manufacturing industry. As domestic demand for manufactured goods was very limited, the country had to depend on overseas markets.

The rapid economic growth of the last three decades has been led by extremely fast export growth, and government intervention in the market system has been extensive. Through a series of five-year economic development plans, the government fostered certain sectors to become future export industries.

During the period from the early 1960s to the mid-1970s, the goal of industrial policy was to develop key industries using instruments such as financial subsidies, tax incentives, tariff and non-tariff import barriers, devaluation of local currency to boost exports, and exemption of exporters from import duties when they purchased raw materials from abroad. As a result, a secure supply of basic materials was available to producers in the Republic of Korea as key industries grew and export-oriented economic growth was possible.

Such government intervention did, however, have some side-effects. Tight government control over financial markets, for example, prevented them from growing on their own, and heavy money supply for economic growth led to high levels of inflation. Late 1970s development policies for heavy and chemical industries were especially criticized as they upset the cost in the country between large and small firms, assembly industry and parts industry, central area and peripheral areas. To develop heavy and chemical industries, the government provided extensive financial and tax incentives, issued administrative instructions, limited entry into the industries to protect incumbent firms, and restricted imports of foreign goods so as to allow local producers to increase their competitiveness. As a result of these supportive measures, a structural change in manufacturing industries took place, with heavy and chemical industries increasing their share in total manufacturing GDP at the expense of light industries.

At the start of the 1980s, the Government of the Republic of Korea sought policy directions to rationalize industries in order to make them more sound and competitive. The government also announced that it would pursue a private-sector-led economy rather than a government-led economy and promote competition both within domestic markets and from abroad. The government was leaning towards conservative management of fiscal and monetary policies. It rapidly reduced interest rate differentials between preferential policy loans and non-preferential loans. Entry barriers were also gradually lifted. These policies succeeded in reducing the double-digit inflation rate to under 3 or 4 per cent a year by 1983 and in promoting competition within the domestic market. They also overcame problems of excessive investment or excess capacity. However, the government was criticized during the

1980s for its low level of investment in social overhead capital and in education and training programmes.

Table 1: Change in industrial structure, 1960-88 (%)

Year	Agriculture, forestry and fishing	Mining	Manufacturing	Others
A. Gross domestic product by sector				
1960	36.9	2.1	13.6	47.4
1965	38.7	1.8	17.7	41.8
1970	25.8	1.3	21.0	51.9
1975	24.9	1.4	26.6	47.1
1980	15.1	1.4	30.6	52.9
1985	13.9	1.5	29.2	55.3
1988	10.8	0.7	31.6	56.9
B. Employment by sector				
1960	68.3	0.3	1.5	29.9
1965	58.6	0.9	9.4	31.1
1970	50.4	1.1	13.1	35.4
1975	45.7	0.5	18.6	35.2
1980	34.0	0.9	21.6	43.5
1985	24.9	1.0	23.4	50.7
1988	20.7	0.8	27.7	50.8

Source: Economic Planning Board: *Major Statistics of the Korean Economy*, various issues. Bank of Korea; *Economic Statistics Yearbook 1962*.

During the second half of the 1980s, industrial policies aimed to allow more autonomy to the private sector, open the economy to outside competition, promote technology, enhance public welfare, improve workers' rights and pursue a balanced growth of local regions. The government tried to achieve these goals using a variety of policy instruments: import liberalization, curtailment of export subsidies, reform of labour-related laws, and investment in less developed regions. According to many analysts, income distribution improved significantly and economic power became less concentrated in the hands of a small number of business conglomerates; regional development plans for less developed areas got started. However, owing to the frequent labour unrest that occurred during the period after the liberalization of the labour movements in 1987, worker morale was weakened and employers became so discouraged that they felt much less enthusiasm for their businesses than before.

1.2 Trade structure and trade policies

In 1962, when the Republic of Korea started its first five-year economic development plan, its exports fell short of US\$1 billion. In 1970, they surpassed US\$8 billion and in 1992, they amounted to about US\$768 billion. At the same time, imports rose so fast that the trade balance continued to remain in deficit until the mid-1980s (see table 2). After a short period of trade surplus in the late 1980s, the economy began to experience trade deficits again. During the early stage of development, more than 70 per cent of export goods were so-called primary goods such as agricultural or fishery products. Owing to rapid industrialization, however, the share of manufactured products in total exports surpassed 80 per cent in 1970; recently it rose above 95 per cent (see table 3).

Table 2: The Republic of Korea's trade balance, 1962-92

	1962	1970	1980	1985	1992
Exports (US\$ bn)	0.6	8.4	175	302	768
Imports (US\$ bn)	4.2	19.8	223	311	817
Export dependency (%)	5.1	14.0	35.2	37.8	29.5 ¹
Import dependency (%)	16.6	23.5	42.9	37.2	32.1 ¹

Source: Korea Trade Association; *Trade Statistics*, many issues. Korea Trade Association, *Yearbook of Trade*, many issues.
IMF: *International Financial Statistics*, various issues.

¹: Figure for 1991.

The composition of export goods has also changed drastically over the past three decades. The share of heavy and chemical products in total exports was no more than 10.7 per cent in 1972, yet from 1982 its share was larger than that of light industry products; it amounted to almost 60 per cent in 1991.

Table 3: Structural change in export goods, 1962-91 (%)

	1962	1970	1980	1985	1991
Primary goods	73.0	16.4	7.7	5.2	4.6
Manufactured goods	27.0	83.6	92.3	94.8	95.4
Light industry	20.0	72.9	48.4	37.7	35.5
Heavy and chemical industries	7.0	10.7	43.9	57.0	59.9
Total	100.0	100.0	100.0	100.0	100.0

Source: Korea Trade Association, *Yearbook of Trade*, various issues.

Trade policy during the 1970s severely limited imports of foreign goods competing with the products of the favoured industries, reversing the liberalizing trend that had prevailed since the mid-1960s. In 1967, there was a shift in the import regime from a "positive list system" to a "negative list system". For the manufacturing sector as a whole, the ratio declined from 42 per cent to 40 per cent between 1970 and 1975. The policy increased protection for heavy and chemical industries by putting some products back on the 'negative list' requiring prior government approval for imports.

1.3 Recent strategies for higher competitiveness

According to President Kim's administration, national competitiveness depends on how much capital, both human and physical, accumulates in an economy and how effectively the economy can allocate and use these assets. To enhance national competitiveness, the government aims, first of all, to stabilize factor prices like wages, interest rates and land prices. High factor prices have been identified as major obstacles to the cost competitiveness of the Republic of Korea's products. Wage levels have risen sharply since liberalization of the labour movement in 1987. During the boom period from the late 1980s to the early 1990s, the economy witnessed rises in real estate prices to record high levels.

Table 4: The market shares of the industrial products of the Republic of Korea in world exports, 1968-83 (%)

Year	"Heavy and chemical" industrial products (1)	"Light" industrial products (2)	Industrial exports as % of all exports in Korea (3)
1968	0.03	1.35	83.18
1969	0.07	1.50	81.66
1970	0.07	1.83	87.24
1971	0.09	2.13	88.05
1972	0.20	2.45	87.83
1973	0.33	3.52	84.69
1974	0.42	3.44	84.46
1975	0.33	4.13	84.23
1976	0.48	5.51	84.38
1977	0.54	5.56	80.32
1978	0.70	5.92	83.93
1979	0.71	5.52	82.72
1980	0.80	5.27	82.62
1981	1.04	6.40	82.19
1982	1.25	6.10	83.36
1983	1.60	6.23	85.00

Note: Column (3) shows the percentage of the Republic of Korea's manufacturing exports accounted for by exports of the products included in columns (1) and (2).

Table 5: Import liberalization ratio by manufacturing industry, 1966-1986 (per cent)

Industry	1966	1970	1974	1978	1982	1986
Food	14.5	13.2	22.4	37.5	34.1	55.9
Beverages	0.0	0.0	0.0	0.0	13.0	19.6
Tobacco	0.0	0.0	0.0	0.0	9.1	9.1
Textiles	2.3	23.7	25.2	74.7	75.4	86.9
Clothing	0.0	16.7	16.7	70.6	44.8	95.7
Footwear	12.9	25.8	35.5	70.8	74.6	93.5
Wood	7.7	53.8	64.1	93.1	96.2	100.0
Furniture	0.0	14.3	14.3	0.0	60.5	95.6
Paper	2.9	40.0	20.0	63.2	88.5	88.0
Printing	0.0	27.3	54.5	90.9	100.0	100.0
Chemicals*	18.9	38.5	35.0	25.7	46.6	66.6
Other chemicals	8.3	43.3	51.7	54.9	59.6	66.4
Oil refining*	12.5	6.3	12.5	12.5	51.2	53.5
Petrol products	27.3	100.0	100.0	100.0	100.0	100.0
Rubber	0.0	35.3	52.9	88.2	92.7	92.9
Non-metallic mineral products	15.7	71.4	65.7	77.3	80.1	83.6
Iron and steel*	4.9	64.6	67.1	84.2	93.3	95.6
Non-ferrous metals*	16.5	75.9	73.4	88.1	86.4	88.6
Fabricated metals*	3.3	33.3	33.3	70.4	91.5	94.6
Non-electrical machinery*	14.1	56.3	33.8	47.6	64.4	76.5
Electrical machinery*	0.0	23.5	17.6	31.0	46.9	64.5
Transport equipment*	0.0	16.9	13.8	44.4	58.8	69.2
Miscellaneous manufacturing (average)	8.1	41.7	40.1	56.6	64.1	77.1

* Indicates the industries that were favoured by the policy favouring heavy and chemical industries.

Source: Based on Appendix Table 1, K.S. Kim, 1988.

Second, the government recognises the need for a better infrastructure, which means more investment in social overhead capital, human resources and technology development, and the communication system. Rapid increases in the number of passenger cars since the late 1980s have caused severe road congestion and soaring transportation costs. In addition, as national prosperity grows, people tend to avoid certain difficult, dangerous and dirty jobs which are typically found in some traditional industries. In such industries it is therefore very hard to hire workers.

Third, the government will allow the private sector more autonomy and competition by gradually lifting administrative restrictions, helping fair trade practices root deep in all transactions, and streamlining public enterprises. Finally, it will continue to pursue globalization and internationalization to adapt to the changing world trade environment.

1.4 Implications for employment and training policies

There has been a tendency for technological protectionism to become stronger as world competition becomes more severe. While national economies become increasingly open and business activity more globalized, the advanced countries try harder than ever to protect their technology. Technology thus became the core of competitiveness - in other words, technology is economic power.

The current situation in the Republic of Korea is that structural change is needed in the domestic labour market; the national economy needs to shift its focus from labour-intensive industries based on low-wage labour to high-value-added industries. Many analysts argue that the price competitiveness of the Republic of Korea's manufactured goods has been lost as productivity growth has fallen short of high wage increases since the late 1980s.

It is also pointed out that too many students prefer to major in liberal arts or social science rather than natural science or engineering. Moreover, people tend to overinvest in higher education. As many workers are reluctant to take jobs in the manufacturing sector, employers - especially those in small businesses - have trouble in hiring workers. The time has therefore come when the Republic of Korea should modify its strategy of depending on price competition based on low wages and reorient its economy toward industries with high value added.

It will thus be vital to the national economy to secure the highly skilled workers needed to introduce technological innovations to enhance the competitiveness of the manufacturing sector. To get round the problems arising from high wages and a shortage of production workers the Republic of Korea has to create more industries with high value added, it is therefore important to make available the technologically skilled manpower that is demanded in such industries. Moreover, technology develops particularly fast in the world of business. Educational institutes should therefore be able to provide high-quality education in technology and to close the enlarging technology gap between industry and school.

2. Employment and education/training in the Republic of Korea

2.1 Labour demand analysis

2.1.1 *Employment structure by industry*

As the Republic of Korea moved from an agricultural economy to an industrialized one it created so many jobs that the economy was able to absorb labour from the rural areas. Until the mid-1970s, the manufacturing sector took a leading role in creating employment. However, from the late 1970s, with the overseas construction boom, especially in the Middle East, employment in the tertiary sector grew very fast.

In 1960, agriculture, forestry and fishing had a 68 per cent share in total employment, while only 7 per cent and 8 per cent belonged to the manufacturing and tertiary sectors, respectively (see table 6). Thereafter the share of the primary sector in total employment declined continuously while the other two sectors rose in terms of both shares in employment and absolute numbers employed. By 1970, the primary sector accounted for 51 per cent of total employment, a drop of 15 per cent from the 1960 level. Its share declined further to 34 per cent in 1980 and 20 per cent in 1988, which was less than the shares of the two other sectors.

Table 6: Employment by industrial sector, 1960-88 (%)

Year	Agriculture forestry and fishing	Mining	Manufacturing	Others
1960	65.7	0.7	6.9	25.9
1965	58.6	0.9	9.4	31.1
1970	50.4	1.1	13.1	35.4
1975	45.7	0.5	18.6	35.2
1980	34.0	0.9	21.6	43.5
1985	24.9	1.0	23.4	50.7
1988	20.7	0.8	27.7	50.8

Source: Economic Planning Board: *Major Statistics of the Korean Economy*, various issues.
Bank of Korea: *Economic Statistics Yearbook 1962*.

Employment in the manufacturing industry grew fast until the early 1970s (see table 7). However, its growth rate slowed down thereafter, reflecting the decreasing elasticity of employment as manufacturing industry moved from labour-intensive light industries to capital-intensive heavy and chemical industries.

Table 7: Employment growth in the manufacturing sector 1966-85

	Of which:				
Year	Manufacturing total	Heavy and chemical	Light	Electrical machinery	Clothing and footwear
A. Employment (thousands of persons, per cent)					
1966	820.1 (100)	127.9 (16)	692.2 (84)	18.5	159.7
1970	1 149.2 (100)	199.6 (17)	949.6 (83)	41.6	159.5
1973	1 511.7 (100)	307.7 (20)	1 204.0 (80)	98.0	226.2
1975	2 023.5 (100)	428.1 (21)	1 595.4 (79)	145.0	318.2
1978	2 573.3 (100)	625.6 (24)	1 952.7 (76)	241.5	401.5
1980	2 538.8 (100)	657.7 (26)	1 881.1 (74)	257.9	349.6
1983	2 749.3 (100)	835.4 (30)	1 913.9 (70)	287.9	313.9
1985	2 867.4 (100)	922.2 (32)	1 945.2 (68)	314.9	332.9
B. Average annual percentage changes					
1970-78	10.6	15.4	9.4	24.6	12.2
1978-85	1.4	5.7	-0.1	3.9	-2.6
Note: Figures in parentheses represent the share of each category in the total.					

Note: Figures in parentheses represent the share of each category in the total.

2.1.2 Employment by educational attainment

The most remarkable change in the composition of the labour force of the Republic of Korea is that more educated workers have continued to enter the labour market since the early 1960s (see table 8). In 1960, among male employees, almost 80 per cent had a primary school diploma or less, 9 per cent had a middle (junior high) school diploma, 8 per cent a high school diploma, and 3 per cent a college degree or more (see table 9). In 1994, however, the figures were 16.3 per cent, 15.9 per cent, 46 per cent and 22 per cent, respectively. Average educational attainment has thus been rising with the number of graduates from high schools and colleges increasing particularly fast.

Higher levels of educational attainment can also be witnessed among women workers. In 1960, 95 per cent of women workers had a primary school diploma or less, 3 per cent were middle school graduates, 2 per cent were high school graduates, and only 0.2 per cent were college graduates (see table 10). By 1994, the figures were 32 per cent, 18 per cent, 38 per cent and 12 per cent respectively.

Table 8: Employed people (men and women) by educational attainment, 1985-94 (000s)

Year	Total	Primary school or less	Middle school	High school	College
1985	14 970	5 650	3 165	4 620	1 534
1990	18 085	5 264	3 532	6 814	2 475
1994	19 837	4 509	3 312	8 486	3 530

If we look at educational attainment by industry as of 1994, male workers with a primary school diploma or below were most concentrated in agriculture, forestry and fishing, construction, manufacturing, and wholesale and retail trade, in descending order. Male workers with a middle school diploma were most concentrated in manufacturing industry, agriculture, forestry and fishery, and construction, again in descending order. High school graduates were most heavily represented in manufacturing, wholesale and retail trade, and social and personal services. As for college graduates, they were most heavily represented in social and personal services, followed by manufacturing and wholesale and retail trade.

Table 9: Employed men by educational attainment, 1985-94 (000s)

Year	Total	Primary school or less	Middle school	High school	College
1985	9 137	2 639	2 008	3 242	1 248
1990	10 709	2 272	2 051	4 517	1 869
1994	11 832	1 937	1 877	5 437	2 581

Table 10: Employed women by educational attainment, 1985-94 (000s)

Year	Total	Primary school or less	Middle school	High school	College
1985	5 833	3 012	1 157	1 379	287
1990	7 376	2 991	1 481	2 297	606
1994	8 005	2 572	1 435	3 049	949

2.1.3. Employment structure by occupation

If we look at the occupational composition of manufacturing workers, the share of professional engineers increased slightly from 4.4 per cent in 1966 to 4.8 per cent in 1986 while that of male professional engineers increased from 6.2 per cent to 8.1 per cent during the same period. However, there has been no major change in the occupational composition of manufacturing workers (see table 11).

Table 11: Employed people by occupation, 1985-93 (000s)

Year	Total	(1)	(2)	Sales workers	Service workers	(3)	(4)
1985	14 970	1 090	1 729	2 313	1 622	3 686	4 530
1990	18 085	1 575	2 352	2 627	2 018	3 216	6 298
1993	19 253	1 979	2 892	3 061	2 374	2 803	6 145

(1) Professional, technological, administrative and managerial workers.

(2) Clerical and related workers.

(3) Agricultural and forestry workers, hunters, fishermen and related workers.

(4) Production and production-related workers, transport equipment operators and labourers.

2.2 Labour supply analysis

2.2.1 School education

(a) High school education

In the Republic of Korea, demand for secondary and higher education has been rising steadily. The proportion of children graduating from primary school jumped from 54 per cent in 1965 to almost 96 per cent in 1980 to 99.8 per cent in 1991. The corresponding figures for middle school were 69 per cent in 1965, 85 per cent in 1980, and 98 per cent in 1991.

The number graduating from general high schools increased by 74 per cent between 1978 and 1988. However, the increase was only 37 per cent for vocational high schools during the same period. The number of graduates of vocational high schools actually declined from 1980 to 1990.

Table 12: Entrance to high schools and colleges 1970-92 (000s)

Year	Freshmen in high schools		Freshmen in colleges		
	A. General	B. Vocational	(1)	2-year college	4-year college
1970	114	101	44.9	-	36
1975	254	175	40.8	-	52
1980	324	285	46.8	81	116
1985	457	307	40.2	108	202
1986	483	301	39.8	110	198
1987	436	301	40.8	110	195
1988	508	292	36.5	108	187
1989	494	282	36.3	115	191
1990	490	273	35.8	131	196
1991	418	272	39.4	141	201
1992	358	277	43.6	159	212

(1) The ratio of B to (A+B) (%).

Table 13: Transition from high school, 1970-92 (000s)

Year	General high schools		Vocational high schools	
	A	B	A	B
1970	82	33	63	6
1975	137	57	126	11
1979	258	96	182	18
1980	266	104	201	23
1981	279	142	218	33
1982	300	167	246	39
1983	316	178	263	44
1984	343	191	271	41
1985	366	197	277	40
1986	387	207	281	35
1987	412	220	271	30
1988	463	213	260	27
1989	450	225	260	25
1990	488	230	274	23
1991	482	229	272	21
1992	466	230	274	24

A: Total number of graduates (000s).

B: Those who advanced to higher-level educational institutes (000s).

The share of those students enrolled at vocational high schools in the number enrolled at all high schools dropped from 60 per cent in 1975 to 45 per cent in 1980 and 37 per cent 1988 (see table 14).

Table 14: Number of students enrolled in high schools, 1978-88 (000s)

	1978	1980	1982	1984	1986	1988
General	840 (57.7)	933 (55.0)	1 069 (55.6)	1 200 (57.4)	1 345 (59.5)	1 458 (63.4)
Vocational	615 (42.3)	764 (45.0)	853 (44.4)	892 (42.6)	917 (40.5)	843 (36.6)
Total	1 455 (100)	1 697 (100)	1 922 (100)	2 092 (100)	2 262 (100)	2 301 (100)

Source: Ministry of Education, *Yearbook of educational statistics, 1978-90*.

Note: Figures in parentheses represent the proportion of the total.

The people of the Republic of Korea traditionally have great respect for education. Parents invest as much as they can afford in their children's education. One reason why the number of vocational or industrial high school students has decreased is the large wage gap between high school graduates and college graduates and the fact that it is difficult for vocational high school graduates to go on to college (see Table 13). The second reason is that vocational high schools need more large-scale investment to provide facilities than general high schools do.

(b) College education

The proportion of high school graduates going on to colleges was at a peak level of 36 per cent in the mid-1980s when the government drastically increased the number of students each college was allowed to enrol. The 1991 rate is slightly lower than the 1985 rate but the total number of college enrolments increased during the period (see table 15).

Table 15: Number of students in higher education,¹ 1970-88

Year	2-year college ²	4-year college	Graduate school
1970	33 353	146 414	6 640
1975	62 866	208 986	13 870
1980	165 051	403 989	33 939
1985	242 117	931 884	68 178
1988	266 844	1 003 648	75 117

¹Teachers' colleges and miscellaneous schools are excluded.

²Junior colleges have two-year courses except nursing and marine colleges which have 3 year courses.

Source: Ministry of Education: *Statistical Yearbook*, 1970-88.

2.2.2 Vocational training

(a) Establishment of a vocational training system

In Western countries vocational training has a long history dating back to the days when the apprentice system evolved in the private sector. The Republic of Korea has no such tradition. It was on 16 January 1967, during the period of the first five-year economic development plan, that vocational training was formally introduced with the passing of the Vocational Training Act. With the heavy and chemical industries being promoted from the mid-1970s, the government passed the Basic Law on Vocational Training in 1976; this became the basis of the current system of vocational training.

At the beginning of the second five year plan, there was an urgent need to train technicians. Following the enactment of the Vocational Training Act in 1967, the government expanded training facilities continuously, using loans and assistance from foreign countries and international agencies as well as domestic funds. In 1968, the central vocational training institute was established to educate vocational training teachers, with assistance from the ILO and UNDP.

The Government of the Republic of Korea also reached an agreement on technological cooperation with Germany in 1971 and established the Korea-Germany Vocational Training Institute in Pusan. In 1973, a training centre was opened with support from the U.S. Government; several others were built in Chunchon and Taegu using loans from the Asian Development Bank. These institutes, built through international cooperation or overseas loans, were provided with state-of-the-art facilities from advanced countries. These facilities were extraordinarily good bearing in mind the stage of economic development of the country.

(b) In-firm training

The Government of the Republic of Korea did not regulate vocational training within firms until 1974. From 1974, however, the government insisted that private firms play a more active role in the vocational training system, and firms were obliged to train technicians within their establishments. The government realized that it would be impossible for it to take

all responsibility for training the technicians that would be needed to develop the heavy and chemical industries, for which the government had declared support in 1973.

It was around 1973 that the economy first reached the point when it could no longer secure an unlimited labour supply from the rural areas. The government therefore announced a policy of specialization for vocational or industrial high schools in 1973, and began to invest intensively in institutions such as industrial high schools. In addition, the government tried to supplement the low level of vocational training by imposing mandatory training requirements on private firms.

A Special Measure regarding Vocational Training introduced in 1974 applied to firms with more than 200 regular workers. It stipulated that the employers were obliged to train at least 20 per cent of their employees and imposed a fine of at least 5 million won for non-compliance. This measure sparked off such resistance from employers that the government limited its application to those employers with more than 500 regular workers. In 1976,¹ the government combined this measure with the old Vocational Training Act in the new Basic Law on Vocational Training. This law makes it mandatory for employers with more than 300 regular employees to train a certain proportion of workers; otherwise they have to pay an allotment for public training. Employers' payments are then pooled and administered under the Basic Law on Vocational Training Promotion.

This Basic Law still remains the backbone of the vocational training system in the Republic of Korea. It divides vocational training into three categories: public vocational training, vocational training within business establishments and certified vocational training. Public vocational training is conducted by national or local government affiliates or some public institutions designated by presidential decree. Vocational training within business establishments is carried out either by one employer or by several employers acting together, while certified training is provided by some institutes with a training permit from the labour minister. In 1981, the government enacted the Law on the Korea Centre for Vocational Training Administration. The Centre carries out a task of skill qualification as well as public vocational training. It changed its name to the Korea Centre for Industrial Manpower Administration in 1991.

2.3 Labour markets and labour relations

2.3.1 Wage structure by industry

Wages in manufacturing industry rose extremely rapidly after the government liberalized the labour movement in 1987. The wage gap between manufacturing industry and other industries decreased quickly as wage increases in high-paid industries were relatively low (see table 16). The wage rise in manufacturing industry was also due to the fact that young workers tend to avoid so-called 3D (dirty, difficult, and/or dangerous) jobs.

Wage differentials among various manufacturing industries also decreased (see table 17). Basic metals and the paper and printing industry have traditionally been high-paid industries in the Republic of Korea. Textiles remains the lowest-paying industry.

Table 16: Earnings* by industry, 1970-92

Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1970	18	19	14	37	24	20	19	38	24
1975	46	55	38	104	62	53	46	96	67
1980	176	203	147	283	258	211	203	282	275
1981	212	244	176	357	320	247	238	340	343
1982	246	269	202	420	366	284	271	388	409
1983	273	286	227	484	387	311	292	417	450
1984	297	297	245	498	381	340	320	480	453
1985	324	325	270	575	400	372	342	519	484
1986	351	355	294	640	416	402	373	551	524
1987	387	385	329	699	453	447	410	613	558
1988	446	447	393	747	504	481	461	661	612
1989	541	530	492	816	594	558	552	738	716
1990	642	606	591	957	745	655	584	852	827
1991	755	711	690	1 124	885	773	699	930	939
1992	869	860	799	1 216	1 020	884	778	1 054	1 079

(1) Non-agricultural industries. (2) Mining. (3) Manufacturing. (4) Electricity, gas and water. (5) Construction. (6) Retail and wholesale trade. (7) Transportation, storage and communication. (8) Finance, insurance, real estate and business services. (9) Social and personal services.

*Earnings include regular pay, overtime pay, cash allowances and bonuses, but no other fringe benefits such as severance payments.
Source: *ibid.*

Table 17: Monthly earnings in manufacturing industries, 1980-92 (won 000s)

Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1980	147	177	114	143	185	175	174	200	154	113
1981	176	214	136	170	219	203	202	244	190	138
1982	202	245	154	193	258	229	227	271	222	153
1983	227	272	172	216	287	255	259	269	250	178
1984	245	269	185	226	304	275	292	353	274	182
1985	270	294	201	242	331	300	318	387	303	194
1986	294	321	221	273	365	325	336	412	329	218
1987	329	372	252	312	399	361	390	488	356	242
1988	393	427	299	380	469	443	446	579	424	299
1989	492	505	365	460	572	538	560	733	541	355
1990	591	609	434	547	698	628	670	858	653	432
1991	690	685	513	630	796	767	781	1 005	746	539
1992	799	786	606	746	905	878	887	1 096	855	629

(1) All manufacturing. (2) Food, beverages and tobacco. (3) Textiles, clothing and leather. (4) Wood and wood products. (5) Paper and paper products, printing and publishing. (6) Chemical, petroleum, coal, rubber and plastics products. (7) Non-metallic mineral products. (8) Basic metals. (9) Fabricated metal products, machinery and equipment. (10) Others.

Source: *ibid.*

The difference in average wages between large firms and small firms has widened (see table 18). This is largely because labour can organize well in large firms and take advantage of collective negotiations for wage increases. Another reason is that large firms are generally better able to afford to raise wage rates.

Table 18: Monthly earnings by number of regular employees in firm, 1980-92 (won 000s)

Year	10-29	30-99	100-299	300-499	more than 500
1980	166	177	173	183	174
1981	194	213	209	218	219
1982	225	245	241	256	254
1983	241	272	270	287	284
1984	282	289	279	312	316
1985	308	314	308	340	344
1986	332	341	338	367	369
1987	360	374	370	404	412
1988	396	408	423	479	499
1989	461	485	508	584	621
1990	549	572	603	698	741
1991	633	676	736	804	892
1992	740	794	841	920	1 019

Source: Ibid.

2.3.2 Wage structure by educational attainment

Since 1987, the wage gap between people of different educational attainment has narrowed (see table 19). In particular, the gap between the wages of middle and high school graduates and those of college graduates is getting smaller. As labour organizations became more active, wages for high school graduates rose dramatically - one of labour's major goals had been to close the wage gap between these two groups.

Table 19: Monthly wages by educational attainment (non-agricultural industries) (won 000s)

Year	All	Junior high	Senior high	2-year college	4-year college
1980	173	124	181	265	413
1981	210	151	219	313	492
1982	245	174	249	349	558
1983	271	194	267	373	605
1984	295	214	287	378	651
1985	314	226	303	393	686
1986	345	251	324	417	718
1987	379	279	348	442	779
1988	447	340	414	501	839
1989	525	405	487	580	930
1990	617	477	569	668	1 056
1991	734	568	671	788	1 203

Source: Ministry of Labour, *Survey of Earnings by Occupation*, various issues.

Another important reason is that the unemployment rate among college graduates has been so high in recent years: close to 5 per cent compared with an average unemployment rate of around 2.5 per cent. High unemployment rates among college graduates have also induced them to look for jobs traditionally sought by high school graduates. This would result in moderate rises in the average earnings of college graduates.

2.3.3 Wage structure by occupation

Table 20: Monthly earnings by occupation (including bonuses), 1980-91 (won 000s)

Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1980	151	266	438	177	109	115	118
1981	181	303	493	213	137	139	144
1982	210	363	534	240	193	161	164
1983	233	394	590	258	224	176	182
1984	252	423	632	279	242	193	200
1985	269	448	680	297	269	202	211
1986	294	479	701	319	281	216	233
1987	322	545	752	344	292	239	260
1988	374	575	840	397	337	293	314
1989	435	630	921	452	367	319	371
1990	502	695	1 035	519	413	370	430
1991	590	777	1 362	602	454	433	511

(1) Average of all occupations. (2) Professional and technologically skilled workers. (3) Administrative workers. (4) Office workers. (5) Salespersons. (6) Service workers. (7) Production workers.

Source: Ibid.

The earnings difference between production workers and office workers has also narrowed (see table 20). The explanation is similar to that given in the case of earnings and educational attainment in that production workers mostly have a high school diploma while office workers have college degrees. It should also be noted that the rapid rise production workers' earnings despite considerable shortening of their working hours.

2.3.4 Labour relations and their impact on the labour market

Table 21: Labour disputes, 1987-94

Year	Participants in disputes ¹ (persons)	Labour loss (days)	Production loss (won bn)	Exports loss: (US\$ m)
1987	1 262 285	6 976 935	2 778	537
1988	293 455	5 400 837	3 202	732
1989	409 134	6 351 443	4 199	1 363
1990	133 916	4 487 151	1 438	314
1991	175 089	3 271 334	1 231	238
1992	105 034	1 527 612	1 958	260
1993	108 577	1 308 326	2 087	564
1994	104 339	1 484 368	1 502	550

¹ Participants are those who attended a dispute rally at the beginning.

Source: Ministry of Labour, Ministry of Industry and Trade.

As the labour movement was liberalized from June 1987, labour could command greater bargaining power in collective bargaining. There were frequent labour disputes and substantial work stoppages from 1987 to the early 1990s. As workers asked for more favourable working conditions and higher wages - and in most of cases successfully achieved their goals - a growing number of employers faced difficulties in conducting their businesses compared with previous years. To get round such difficulties, some tried to substitute automated processes

for workers, thus making their production methods more capital-intensive. Others transferred their plants overseas to seek cheaper labour. This obviously triggered a decrease in domestic employment, especially in labour-intensive sectors of the economy.

3. Evaluation of human resources policies

3.1 Employment-related policies

During the 1960s, the Republic of Korea remained competitive in terms of human resources because it could utilize cheap labour with high levels of educational attainment compared with other developing countries. This comparative competitiveness in terms of human resources has been an engine of growth for the past 30 years.

The consecutive five-year economic development plans proved quite effective in providing people with more jobs. The export drive policy focused on supporting manufacturing industries, which created a lot of jobs in urban manufacturing areas and induced many people to emigrate from the rural areas. Price controls on rice and rice imports had adverse effects on the local agricultural economy, which lost workers to the manufacturing sector. However, the labour-intensive manufacturing industries could create more jobs during the 1960s than the traditional agricultural economy had ever done.

During the 1970s, the government provided various supports to heavy and chemical industries, which are more capital-intensive. Such policies must have had some effect in slowing down job growth. Of course, more jobs became available later in the 1980s as heavy industries like cars and shipbuilding grew successfully. But labour-intensive light industries lost the growth momentum earlier than they would have done through the policy of favouring heavy and chemical industries.

This policy seems to have led to a factor market distortion. The contrasting experiences during 1966-85 of the heavy and chemical (HC) and light industry groups regarding capital intensity indicate that there was a big difference in the wage-rental ratios faced by the two groups.

From the decline in the light industry group's capital intensity in 1973-75 (see table 22), one can safely infer that the wage-rental ratio must have been falling for the group. It seems that the immediate cause of this declining capital intensity was an employment surge at that time, the reason for which could have been a fall in the factor price, namely the wage rate. However, this was not the case. In the first half of the 1970s, per capita income was rising by more than 9 per cent per annum on average, and the manufacturing wage by nearly 6 per cent, both in real terms. This suggests that the rental rate must have been rising still faster for the light industry group, otherwise the wage-rental ratio could not have declined when the wage rate was increasing.

In contrast, the rapid increase in the HC group's capital intensity suggests that the wage-rental ratio facing this group was rising. Assuming either that the wage rate was the same or that it was rising at the same pace in the HC group and in the light industry group, it can be inferred that the rental rate for the HC group was not rising as fast as for the light industry group.

The key to the explanation of the diverging 'factor price' of capital can be found in the HCI policy, which strongly favoured investment in industries in the HC group during the

1970s. Various incentives provided to the group and direct government involvement in credit allocation lowered the cost of capital for the HC group but raised it for the light industry group. The high cost of capital for entrepreneurs in the light industry group could simply have taken the form of investment funds from banks at government-controlled interest rates not being available or excessively high interest rates on the curb market. In the 1970-78 period, the wage-rental ratio for the light industry group thus remained relatively low, despite the rising real wage rate, while it was rising for the HC industries along with the rising wage rate. What happened to the wage-rental ratio in the late 1970s to reverse the relative speed of increasing capital intensity between the HC and light industry groups?

First, the rise in the real manufacturing wage accelerated from an average annual rate of 6 per cent in the first half of the 1970s to 11.6 per cent in the second half of the decade. Obviously, this acceleration raised the wage-rental ratio for all manufacturing industries, but it must have represented a greater percentage rise for the light industry group. Suppose that the wage-rental ratio for light industries was lower in the mid-1970s because of the HCI policy. The same rise in the wage rate would then imply a proportionately greater rise in the wage-rental ratio for the light industry group than for the HC group.

Table 22: Capital intensity in the manufacturing sector, 1966-85

Year	Manufacturing total	Heavy and chemical	Light	Electric machinery	Clothing and footwear
A. Capital intensity (1980 won million per worker)					
1966	3.9	6.9	3.1	2.3	0.3
1970	4.3	6.7	3.5	2.3	0.6
1973	5.9	8.2	4.8	2.4	0.8
1975	6.2	10.2	4.7	4.8	0.9
1978	7.4	12.5	5.3	4.5	1.4
1980	9.6	15.3	7.0	5.5	1.9
1983	11.1	16.0	8.3	6.7	2.6
1985	12.6	17.7	9.4	9.5	2.8
B. Average annual changes (%)					
1966-70	2.5	-0.7	3.3	0.0	14.4
1970-73	11.1	7.0	11.1	1.5	10.2
1973-75	2.8	11.9	-0.7	41.2	7.7
1975-78	5.7	7.1	4.2	-2.1	16.4
1978-80	14.1	10.3	14.9	10.0	14.0
1980-83	5.1	1.7	5.6	7.1	11.1
1983-85	6.3	5.1	6.4	19.0	4.4
1970-78	7.0	8.2	5.4	8.8	11.8
1978-85	7.9	5.0	8.4	11.2	10.1

Second, profitability was declining in manufacturing industries because a slow decline in the world and domestic economies in the late 1970s. The light industry group in particular was losing export markets in 1979 and 1980. The light industry group was therefore laying off workers, and the heavy and chemical industries had almost stopped increasing employment. Hence, the capital intensity rose faster in the light industry group although the group's capital accumulation was slower than that in the heavy and chemical group in the years 1978-80.

Besides rising real wages, changes in real interest rates also tended to raise the wage-rental ratio faster for the non-HC group in the 1980s. After the government discontinued the

HCI policy in the spring of 1979, it succeeded in bringing inflation under control in the early 1980s. As part of the new government policy of reducing its intervention in the market, government-controlled interest rates on bank loans were lowered, but not as fast as the inflation rate, thus raising real interest rates. In this process, interest rates on preferential policy loans were lowered at a slower pace than those on other loans as a way of reducing discriminatory practices. Consequently, real interest rates rose faster for heavy and chemical industries, which had been the beneficiaries of the discriminatory practices, than for light industries. This also must have had the effect of slowing down the rise in the wage-rental ratio of heavy and chemical industries, thus leading to a slower rise in the industries' capital intensiveness than in light industries during the 1980s.

Table 23: Capital accumulation in the manufacturing sector, 1966-85

Year	Manufacturing total	Heavy and chemical	Light	Electric machinery	Clothing and footwear
A. Capital stock (1980 won bn)					
1966	3 232.7	876.2	2 116.5	43.2	54.5
1970	5 009.2	1 329.7	3 309.8	96.2	93.5
1973	9 039.7	2 508.3	5 748.0	237.2	177.2
1975	12 509.3	4 371.1	7 510.5	699.7	289.4
1978	19 228.8	7 850.8	10 400.6	1 095.4	575.8
1980	30 831.2	10 042.5	13 231.0	1 414.4	651.6
1983	36 309.8	13 406.2	15 840.7	1 940.1	803.4
1985	42 882.2	16 333.4	18 219.0	3 005.9	927.7
B. Average annual changes (%)					
1966-70	11.6	11.0	11.8	22.1	14.4
1970-73	21.7	23.6	20.2	35.1	23.8
1973-75	18.9	32.0	14.3	71.8	27.8
1975-78	14.6	21.6	11.5	16.1	25.8
1978-80	12.9	13.1	12.8	13.6	6.4
1980-83	7.9	10.1	6.2	11.1	7.2
1983-85	8.5	10.4	7.2	24.5	7.5
1970-78	18.3	24.9	15.4	35.5	25.5
1978-85	9.5	11.0	8.3	15.5	7.1

3.2 Education/training policies

3.2.1 Educational policies

Since the early 1960s the Ministry of Education has regulated educational institutes, from primary schools to colleges, establishing and administrating ceilings for student enrolment. The title and enrolment ceiling of every department of every college is mandated by government decree. To change these, a college must receive a permit from the Ministry of Education.

Because of heavy restrictions by the government, higher education has experienced excess demand. This excess demand has resulted in a lack of competitiveness among colleges.

To correct these problems, the government started a comprehensive evaluation of colleges from early 1990s. Based on the evaluation results, the government decided to allow colleges to increase their departments and enrolment ceilings. However, because the increases

are quite limited, this policy has not succeeded in getting them to make extensive improvements in educational staffs and facilities.

(a) College graduates majoring in engineering

The ratio of engineering majors to all college graduates decreased in the 1980s whereas it had risen in the 1970s (see table 24). This has led to a structural mismatch between industrial demand for technologically skilled manpower and college education.

Table 24: College graduates majoring in engineering, 1970-92

	1970	1980	1985	1987	1990	1992
Number of college graduates	4 078	11 311	23 448	27 768	30 514	31 906
Share (%)	(17.3)	(22.7)	(19.8)	(18.6)	(18.4)	(17.9)

Source: Ministry of Education; *Yearbook of Educational Statistics*, various issues.

There is said to be a big technological gap between the technological skills required by employers and the actual ability of college graduates since college education cannot catch up with rapidly developing technological trends in industry. Employers therefore argue that poorly qualified college graduates cause more serious problems than the decrease in the proportion of engineering college graduates majoring in engineering.

The number of college students per professor is as high as 30 in the Republic of Korea, compared with eight to ten in Japan or Germany. In engineering colleges in the Republic of Korea, the number per professor is 50, much higher than average. The number of professors apart, colleges are also criticized because they cannot invest more in books and libraries, experimental equipments and other educational facilities.

A further problem is that technologically skilled college students may not be available to manufacturing industries. College graduates tend to avoid manufacturing industries and small businesses. As of 1992, only 37 per cent of engineering college graduates were working for manufacturing firms.

(b) Two-year or Junior college education

The two-year or junior colleges are the main source of supply of technicians with intermediate skill levels, who play vital roles in workplaces. The number of graduates declined in 1980s but recently it started to rise again (see table 25). In the early 1980s, 50 per cent of all two-year college graduates majored in engineering. However, since increases in enrolment have mostly involved social sciences majors, the ratio dropped to 32.5 per cent in 1990. The absolute number of engineers also declined during the 1980s. From the late 1980s, there has been keen competition for admission to two-year colleges as manufacturing industries offered a lot of job openings for two-year college graduates.

The ratio of the employed to all senior class students in engineering two-year colleges was 44.8 per cent in the mid-1980s but it continued to rise up to 82.9 per cent in 1992.¹ However, the quality of two-year college graduates is judged to be far below the level

¹ Among the employed are included those students who advanced to graduate schools and began their mandatory military service.

required in industry. Overall, teaching staffs and facilities are less good than those in four year colleges.

Table 25: Two-year junior college graduates majoring in engineering, 1982-92

	1982	1985	1987	1990	1992
Engineering majors	29 071	27 491	28 759	28 328	36 224
Share (%)	(50.1)	(37.2)	(34.8)	(32.5)	(34.0)
Competition rate ¹	1.47 ²	1.52	2.12	3.30	n.a.

¹Odds ratio to pass the entrance exam.
²Ratio for 1981.
Source: Ministry of Education, *Yearbook of Yearbook of educational statistics*, various issues. *Educational Statistics*, various issues. Source: Ministry of Education,

3.2.2. Vocational training policies

Since 1973, when the National Technology Qualification Act was enacted, technicians have been classified into four qualification categories: master, first-grade technician, second-grade technician and assistant technician. According to the Act, those trainees who have finished a certain level of training courses should take tests; if they pass they are entitled to certificates of technological qualification.

The second-grade technician certificate is conferred on trainees with an intermediate level of skill. First-grade technicians must have a higher level of skill, including the application ability, than is required for second grade technicians.

To take a qualifying test to become a first-grade technician, trainees have to show that they have either at least seven years work experience or three years' work experience since becoming a second grade technician, or four years' work experience after high school, or a diploma from a two-year college, or a diploma from a first-grade technician course accredited by the Ministry of Labour.

The Basic Law on Vocational Training classifies vocational training into four categories: basic training, advanced training, retraining and further training. By taking a basic training course, workers can acquire the basic skills needed for their jobs with. Advanced training is designed for those who have already done basic training or those with basic skills. There are two different types of course: the one is for those who want to get certificates; the other is for those with job experience of one or more years who want to learn to use new technology or to acquire high-level job skills such as administration and supervision. Re-training is to help workers acquire entirely new skills or other skills related to what they already have. Further training is provided to workers to complement a shortage of required job skills. For each type of training, the government regulates the training period, the qualifications of trainees, the content of the training, and the ratio of trainees to teachers. The government reimburses part of the costs incurred when firms provide training but the amount depends on which type of training they are providing.

The number of people provided with vocational training can be taken as a measure of the performance of vocational training policies. It amounts to 1.5 million people so far. Considering that the number of current production workers is about 1.8 millions, we can see that the vocational training system has been quite helpful to technician manpower development.

But the proportion of firms that have conducted training for their employees has been declining for the past 15 years (see table 26). In 1991, it amounted to 19 per cent. Even among those 507 firms who conducted training, only 115 had their own training programmes; the others were sending employees to outside training centres. The number of in-firm training institutes was far smaller than it was in 1977. To summarize, for the past 15 years firms' participation rate has showed a tendency to decrease, with the number of trainees fluctuating depending on the government's requirements. This means that firms have not been carrying out training programmes well enough but merely to show formal compliance with the demands of government. In-firm training has not taken root in the Republic of Korea's business society. During the period of the second five-year economic development plan when the vocational training system started, many workers were trained in the field of industrial arts. The government was at that time developing wood craft, metalware and jewellery cutting as a traditional export industry. In the 1970s, when the third five-year economic development plan was under way, the number of workers trained for the textile industry had increased considerably.

During the period of the fourth five-year economic development plan from 1977 to 1981, more workers received vocational training than in any other period. The fields where there was a big increase in the number of trainees during the period include metal processing such as welding and pipe fitting, transportation equipment and construction equipment, construction and wood processing. Metal-processing skills were in demand as the government was promoting the development of heavy and chemical industries. The increase in trainees in the fields of construction and construction equipment was related to the construction boom which occurred in late the 1970s. At that time most comprehensive construction companies sent overseas those workers trained in their own in-firm training centres.

In the 1980s, however, as in-firm vocational training dwindled, the number of trainees decreased in most fields. There was an especially sharp decrease in the number of trainees in textiles. Those areas like construction, wood processing, transportation equipment and construction equipment which led in-firm vocational training in late 1970s also experienced a decrease in the number of trainees in 1980s. In electronics and communications however, the number of trainees grew despite the overall decline in vocational training.

If we look at the data on public vocational training produced by the Korea Center for Industrial Manpower Administration, 111,876 workers or almost 70 per cent of all trainees from 1979 to 1990 were trained in metal processing followed by electricity (13 per cent) and electronics and communications (6 per cent) it is clear that the public vocational training and in-firm training were providing different types of occupational training respectively. Even within the area of textiles, a dyer who needs a higher level of skill and a longer training is taught at the Korea Center for Industrial Manpower Administration while training for footwear and socks manufacturing is provided for about three months by in-firm institutes.

Next we will look at the distribution of trainees by skill level. It was in 1981 that people started to qualify as first-grade technicians. First-grade technicians accounted for 14 per cent of all trainees in 1990 (see table 28). On the other hand, the proportion of all trainees who are assistant technicians dropped to 62 per cent in 1990 from 76 per cent in 1978.

If we at the distribution of trainees by type of institutes we would find the public vocational training institutes leading in improving the skill level of trainees. Whereas 95 per cent of in-firm trainees qualified as assistant technicians in 1990, of those receiving public vocational training 24 per cent qualified as first-grade technicians, 45 per cent as second-grade

technicians and 31 per cent as assistant technicians. There is widespread criticism that the skill level of assistant technicians is too low. Many argue that to improve the national technician qualifying system the grade of assistant technician should be abolished.

Current government vocational training policies still adhere to the basic principles of economic development plans of the 1970s. In the Republic of Korea, despite the vocational training allotment system, business firms still do not participate actively in vocational training. In 1993 41 per cent of total allotment to all firms was collected from firms, which means that the majority of firms do not conduct vocational training. This indicates that the current system is failing to create an incentive for firms to provide more vocational training.

Table 26: In-firm vocational training, 1977-91

Year	Number of firms covered	Average obligation ratio ¹ (%)		Number of firms conducting training and ratio ²	Number of training institutions	Number of trainees
1977	1 012	Trainees	5.70	673 (66.5)	558	58 709
1978	1 095	"	6.20	774 (70.7)	553	73 038
1979	1 223	"	6.70	723 (59.1)	575	90 992
1980	1 103	"	3.14	669 (60.7)	472	66 213
1981	1 103	"	4.13	485 (44.0)	388	48 406
1982	1 106	"	2.44	507 (45.8)	283	30 131
1983	1 185	"	1.78	382 (32.2)	172	20 960
1984	1 263	"	1.82	266 (21.1)	182	22 011
1985	1 341	"	1.73	519 (38.7)	185	23 876
1986	1 398	"	1.63	356 (25.5)	179	19 042
1987	1 537	Transfer cost	0.17	317 (20.6)	130	14 208
1988	1 573	"	0.20	403 (25.6)	132	18 168
1989	1 612	"	0.18	392 (24.3)	110	15 019
1990	2 575	"	0.30	505 (19.6)	122	25 699
1991	2 675	"	0.48	507 (18.9)	147	52 566

¹The ratio of trainees to regular workers set by the government every year, which firms are obliged to meet. From 1987, it was replaced with the ratio of training cost to total wages.

²The actual number of firms which conducted vocational training in any way. Figures in parentheses are the ratio of this number to total firms obliged to provide vocational training.

Table 27: The number of trainees by industry, 1967-91

Field	2nd plan 1967-71	3rd plan 1972-76	4th plan 1977-81	5th plan 1982-91	6th plan 1987-91	Total
Total	98 863	312 736	495 739	273 151	316 319	1 496 898
Metal materials and manufacturing	2 137	7 592	19 530	5 291	6 175	40 725
			(17 280)	(2 671)	(3 348)	(23 299)
Metal processing	16 703	41 866	96 506	82 747	91 018	328 840
			(43 785)	(29 522)	(33 191)	(106,498)
Transport equipment and construction equipment	8 705	30 105	67 827	34 637	54 787	196 061
			(52 630)	(22 227)	(15 331)	(90 188)
Electricity	6 493	15 506	19 114	15 984	18 937	75 514
			(9 929)	(5 407)	(11 960)	(20 558)
Electronics and communications	4 602	34 016	28 708	28 390	21 085	131 205
			(16 366)	(14 797)	(2 997)	(56 820)
Textiles	17 928	89 647	110 381	18 390	18 937	255 283
			(96 360)	(11 268)	(11 960)	(119 588)
Construction and wood processing	3 028	12 818	88 464	50 083	21 085	175 478
			(57 060)	(18 693)	(2 997)	(78 750)
Chemicals	4 766	14 099	22 986	6 338	12 278	60 467
			(22 536)	(5 783)	(11 416)	(39 735)
Printing	2 101	6 808	6 809	3 180	1 009	19 907
			(1 391)	(149)	(61)	(1 601)
Mining	1 200	6 813	9 989	1 341	1 774	21 117
			(9 935)	(1 341)	(1 774)	(13 050)
Industrial arts	16 961	19 768	4 527	2 364	3 423	47 043
			(159)	(48)	(116)	(323)
Food processing	1 507	4 710	9 289	1 005	4 766	21 277
			(9 094)	(1 005)	(2 109)	(12 608)
Other	12 732	28 988	11 609	23 401	47 161	123 891
			(443)	(1 862)	(2 098)	(4 403)

Note: Figures in parentheses are for trainees who received in-firm training.

Table 28: Trainees by institute and by qualification level, 1978-90

	1978	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Total												
All trainees	100 425	104 502	78 365	62 920	52 142	51 846	55 385	50 858	46 059	49 248	56 763	67 702
1st grade (%)	-	-	0.1	0.5	2.0	4.1	4.2	5.9	10.4	12.0	11.7	14.0
2nd grade (%)	24.4	13.4	14.8	22.5	24.3	30.2	30.7	33.2	33.4	28.7	24.7	24.3
Assistant (%)	75.6	86.6	85.1	77.0	73.7	65.7	65.1	60.9	55.2	59.3	63.6	61.7
Public centre												
All trainees	19 201	31 131	26 274	28 085	24 711	22 803	22 583	22 862	22 593	20 745	20 073	24 441
1st grade (%)	-	-	0.3	1.1	4.0	9.1	10.2	13.2	21.1	28.4	29.0	23.8
2nd grade (%)	43.5	36.5	40.7	48.0	48.9	63.0	67.8	67.0	61.9	54.7	49.9	45.2
Assistant (%)	56.5	63.5	59.0	47.1	27.9	27.9	22.0	17.0	17.0	16.9	21.1	31.0
In-firm centre												
All trainees	73 038	66 213	48 406	30 131	20 960	20 764	23 876	19 042	14 208	18 168	15 019	25 690
1st grade (%)	-	-	-	-	-	-	-	-	-	-	-	0.2
2nd grade (%)	19.6	0.1	0.8	0.7	0.6	1.9	3.2	3.5	3.8	3.3	3.5	4.9
Assistant (%)	80.4	98.9	99.2	99.3	99.4	98.1	96.8	96.5	96.2	96.7	96.5	94.8
Certified centre												
All trainees	8 186	7 136	3 685	4 704	6 471	8 926	8 926	8 954	9 258	10 335	21 671	17 571
1st grade (%)	-	-	-	-	-	-	-	-	-	-	3.8	20.4
2nd grade (%)	22.7	26.2	14.4	9.6	7.6	11.5	10.5	10.2	14.4	21.2	16.0	23.7
Assistant (%)	77.3	73.8	85.6	90.4	92.4	88.5	89.5	89.8	85.6	78.8	80.2	56.0

Source: Ministry of Labour; Administration of Vocational Training, various issues.

The current system of public vocational training has not adapted to recent increases in young people's educational attainments. In the past, the public training system was focused on basic training for those who had not advanced to the higher levels in education or could not find suitable jobs. However, this kind of demand for training has almost disappeared now. Among those trainees enrolled in public training centres under the Korea Industrial Manpower Administration Center, in 1993 only 13 per cent had had fewer than nine years of education; the corresponding figure for 1983 is 66 per cent. Half the trainers in public training institutes are students from general high schools who have decided to get jobs rather than go to college after graduation. Despite the fact that the demand for basic training has been declining for a long time, the Republic of Korea's public training system is still focused on training in basic skills. The focus should now move to advanced training and further training.

3.3 Educational reform

In a report to the president in May 1995, the Committee for Educational Reform, advisory group to the president, set out its vision of a new education system befitting an age of globalization and information society. Its aim was to achieve a society where education is open to everyone throughout their lives. Reform along these lines would revitalize the role of education in the nation's human resources development as it would facilitate the linkage between education and the labour market. If the government carries out the reform successfully, it will affect the labour market in the following ways:

First, colleges allow people to enrol as part-time students and introduce new systems of homestudy and credit banking, more young people will be able to study while working and the labour force participation rate of young people will rise. This would alleviate the labour shortage. Second, if the minimum credits required for graduation are lowered, students will be able to take multiple majors and interdisciplinary courses; they will be able to adjust their career plans more flexibly as barriers to other departments(majors) and colleges are lifted. This will lead to a better match between workers and jobs.

Third, the national education system will be able to satisfy the industry's need for diverse specialists when it is possible to build up a graduate school without an undergraduate programme as well as small-scale specialized two-year colleges. Fourth, primary and secondary education can be normalized, escaping from chronic stereotyped mass education under the new system. This will be possible as colleges will be able to select students by a variety of methods, for example using a comprehensive report on a student's life in school. It is expected that the more creative workers that are needed in the age of information will be educated under this system.

4. The car industry and labour policies

4.1 The Republic of Korea's car industry

4.1.1 Growth of the car industry

In the Republic of Korea, car assembly based on modern production methods started in 1962 when the first five-year economic development plan began and the government decided to promote the car industry as a strategic industry. In 1975 the Republic of Korea first

developed its own passenger car. In 1979, annual production exceeded 200,000 units and by 1989 it exceeded 1 million units.

The Republic of Korea started to export cars in 1975 but annual exports remained below 10,000 unit until 1983. Car exports grew explosively in the mid-1980s. In 1987 more than 500,000 units were exported, and the car industry became one of the country's major exporting industries.

(a) Knocked-down assembly (1962-73)

In 1962, the government helped a car company build cars by importing semi-knocked-down parts (SKD) from Japan. This created jobs that involved simply assembling cars from imported parts. The government adopted the following policies for this purpose: (i) a ban on importing foreign cars and selling them on the domestic market; (ii) a ban on importing car parts for other purposes than assembling final cars; (iii) duty exemption for car parts imported by car companies.

However, owing to a shortage of foreign exchange, it became impossible to import parts from Japan and the company shut down after just one year of operation. After 1963, the government switched its policy from SKD to CKD (complete knocked-down) assembling to encourage carmakers to localize automobile parts. The government also sought a scale economy in the car industry. However, the government policies were not successful. New car manufacturers were established: Asia Motors in 1965 and Hyundai Motors in 1967.

(b) Parts localization and comprehensive plants (1974-82)

In 1969, the government drew up a plan to enhance the localization rate. No more than 38 per cent of the parts used in the passenger car, the Corona, assembled partly using CKD parts, were made locally. The government announced a new Basic Development Plan for the Automobile Industry in 1970, the goal being to achieve complete localization. It also designated which items were to be made locally and drew up a schedule for localization. Depending on how far carmakers fulfilled the localization criteria, they were given their production quota and duty exemption on raw materials imported for local parts. The government also announced a plan to give makers the privilege of importing mid-size passenger cars if they achieved complete localization.

In 1973, when the first oil crisis hit the world car industry and fuel-efficient small cars became the top sellers, the government introduced a new Long Term Development Plan for the Automobile Industry. This stated that the government would help the car industry to develop assembly operation and parts supply, separately aiming both to localize car production and to start exporting. The plan was as follows:

- (a) to make locally more than 95 per cent of parts used to produce passenger cars by 1975;
- (b) to meet 80 per cent of domestic demand with locally produced cars with less than 1.5 litres capacity and the remaining 20 per cent with cars with capacity of more than 1.5 litres;
- (c) to promote the car industry as an exporting industry.

The aim of the plan was to develop the hitherto neglected parts industry, and it seems to have been quite successful in doing this. The car industry needs lots of semi-skilled

workers as well as experts with technological know-how, so the rapid growth of the industry in the Republic of Korea created many job opportunities.

(c) Mass production and export (1983-?)

Following the second oil shock in 1979, both the national economy and the world economy went into recession. The car industry in the Republic of Korea faced a severe crisis as car stocks piled up and the operation ratio went down. The government took special measures to adjust heavy and chemical industries where it was manifested that car manufacturers merge to secure economics of scale. But automakers tried themselves but only to fail in merging into one. The government also restricted which types of vehicle carmakers could produce. This restriction was effective until 1986.

Table 29: Production in the car industry, 1977-93

Year	All industries	Machinery industries	Car industry	Share of car industry (%)	
				In all	In machinery
1977	15 438	3 215	493	3.20	15.35
1980	36 279	6 960	1 200	3.31	17.25
1985	77 032	21 623	3 278	4.26	15.16
1990	176 439	66 957	16 239	9.20	24.25
1993	255 926	101 874	23 457	9.17	23.03

From 1982, as the economy recovered from recession, The carmakers expanded their production capacity (see table 29). Hyundai Motors constructed its Pony Excel plant with an annual production capacity of 300,000 units, while Daewoo Motors built a plant with a capacity of 170,000 units. The Republic of Korea's car industry thus entered the early stages of mass production. As Hyundai started to export its own model to Canada in 1985 and to the USA in 1986, automobile exports grew explosively. Kia Motors could also export passenger cars to USA under its tripartite cooperation agreement with Ford and Mazda, while Daewoo manufactured small cars to export to General Motors.

As exports of passenger cars grew, there was some pressure on the government to open up the car market to foreign models. As a result, car imports were liberalized from 1987 and the government has kept on lowering import duty since then.

Table 30: Employment in the car industry, 1978-93 (000s)

Year	All industries	Machinery industries	Car industry	Share of car industry (%)	
				In all	In machinery
1978	2 112	569	57	2.71	10.08
1980	2 015	534	63	3.12	11.77
1985	2 438	755	82	3.35	10.82
1990	3 013	1 123	186	6.18	16.59
1993	2 885	1 168	193	6.68	16.50

Table 31: Exports in the car industry, 1978-94

Year	All industries	Machinery industries	Car industry	Share of car industry (%)	
				In all	In machinery
1978	12 711	3 685	82	0.64	2.21
1980	17 505	4 478	122	0.07	2.56
1985	30 283	13 794	648	3.14	4.70
1987	47 281	19 999	2 997	6.34	15.00
1990	65 016	29 228	1 936	2.98	6.62
1994	96 013	51 928	5 168	5.38	9.95

4.1.2 Competitiveness of cars made in the Republic of Korea

The price competitiveness of cars made in the Republic of Korea seems to stem from relatively low labour costs and favourable foreign exchange rates. With labour costs rising faster than labour productivity, however, the unit labour cost in the car industry is getting higher. Fortunately, long-term trends in foreign exchange rates make the prices of the Republic of Korea's cars more competitive in dollar terms. This exchange rate may of course move in the other direction in the future.

On the other hand, the cost competitiveness in terms of purchasing intermediate materials is decreasing for the Republic of Korea's car industry compared with Japanese car makers. To overcome this problem, the industry is putting more efforts into localizing manufacture of high-tech car parts and base materials. In the later 1980s, the rise in labour costs and other operating costs were the leading factors in increasing manufacturing costs. In the early 1990s, however, the cost of materials was becoming more influential than these two factors.

Table 32: Manufacturing costs of small cars, 1992

	Korea's car industry	General Motors	Ford	Toyota	Nissan	Honda
Labour cost	533	2 388	1 629	828	1 036	920
Material cost	5 085	4 560	3 802	4 719	4 949	4 979
Operation cost	617	1 413	892	1 303	1 476	1 389
Manufacturing cost	6 235	8 361	6 323	6 850	7 461	7 288

Source: ESI: *ESI Report*, 1992, 6.

Note: For Japanese makers, data are from their U.S. plants.

Quality competitiveness has also improved considerably in absolute terms. However, as advanced makers also develop better quality cars, the Republic of Korea's improvements in quality do not seem quite so impressive. Entering the 1990s, the profitability of the car industry improved considerably as a result of makers' efforts to expand their markets into more countries and to develop a variety of high-value-added models. Favourable exchange rates have also helped.

Table 33: Hourly wages of car assembly workers, 1985-91 (US\$)

Year	Republic of Korea	USA	Japan	Germany	UK	Spain	Mexico	Average
1985	1.78	19.71	8.09	12.11	7.17	5.54	2.66	7.51
1986	1.84	20.09	11.80	16.96	8.77	7.74	2.03	9.22
1987	2.11	20.40	13.83	21.47	10.61	9.54	2.45	10.97
1988	3.20	29.80	16.36	23.05	12.08	10.85	1.96	11.95
1989	4.78	21.39	15.65	22.36	12.12	11.74	2.31	11.87
1990	5.78	22.48	15.77	27.58	14.58	15.00	2.79	13.87
1991	6.42	24.21	18.15	28.65	16.08	15.93	3.33	13.84
1986-91 ¹	23.8	3.5	14.4	15.4	14.4	19.2	3.8	10.7

¹Annual average growth rate.

Source: US Ward's automotive yearbook 1993.

Table 34: Unit labour cost (ULC) of carmakers in the Republic of Korea and Japan (based on local currency; 1995 = 100)

	Republic of Korea			Japan			Relative ULC (A/B)
	ULC (A)	Wage cost	Labour product	ULC (B)	Wage cost	Labour product	
1985	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1986	104.2	86.4	82.9	109.4	98.6	90.1	95.2
1987	94.3	98.0	103.9	110.6	98.1	88.6	85.3
1988	110.2	123.0	116.7	107.7	105.4	97.8	102.3
1989	121.5	155.3	127.7	107.5	113.5	105.6	113.1
1990	116.1	182.0	156.7	105.9	120.6	113.9	109.6
1991	127.4	206.4	161.9	114.9	124.4	108.3	110.9
1992	12.62	220.8	175.0	-	-	-	-

4.1.3 Labour relations and the labour market in the car industry

Labour relations in the Republic of Korea's car industry worsened from 1987 as the government liberalized the labour movement after a long period of authoritarian rule. New labour unions were organized within many car companies from then on. In Hyundai Motors, the largest maker in the Republic of Korea, the labour union was organized in July 1987. In 1987, 135 cases of labour disputes in the car industry were reported to the government (see table 35). The damage due to labour disputes was quite extensive because the car industry is vertically integrated. Labour relations remained adversarial in the industry even when labour relations in the country as a whole had stabilized.

Table 35: Labour disputes in automobile industry: 1987-92 (unit: per cent)

Year	Incidence of labour disputes			Average duration (days)			
	All industries	Car industry		Total	All industries	Car industry	
		Makers	Part suppliers			Makers	Part suppliers
1987	3 749	4	131	135	3.5	19.0	8.0
1988	1 873	5	36	41	10.0	34.0	25.0
1989	1 616	3	113	116	19.2	21.0	22.0
1990	322	3	66	69	18.2	11.7	19.0
1991	234	5	65	70	17.8	23.4	20.6
1992	235	1	47	48	20.1	26.0	24.0

Source: Ministry of Labour and Ministry of Trade and Industry.

The greater bargaining power of labour as well as the exploding demand for cars brought rapid wage rises to workers (see table 37). Nominal wage growth rates in the late 1980s were over 20 per cent while rises in the consumer price index were in the range of 3 to 7 per cent.

Since 1987, the agenda at the bargaining table has always included issues like wage increases, new allowances, labour participation in the personnel committee, shorter work hours, better fringe benefits, new hiring procedures and the rehiring of discharged workers. Carmakers in the Republic of Korea have had no difficulty in hiring new workers because they are bigger and the jobs are well paid, quite stable and safe compared with other jobs in manufacturing. However, some parts suppliers have had difficulty in hiring production workers; they will attempt to overcome this problem by introducing more automation and rationalizing the production process. Since 1988, employment in parts suppliers has decreased slightly despite the rapid growth of car production.

To achieve independence in terms of technology, it is necessary for carmakers in the Republic of Korea to secure staff with sufficient technological knowledge and skills. It will be a real challenge to carmakers to enhance the technology-related skills of their workforce rather than simply to secure more workers.

However, the parts suppliers are expected to have some difficulty in hiring production workers because of the poor working environment and conditions. Importing foreign workers has been suggested as an option. If this is not positively considered by the government, it seems almost inevitable that many part suppliers will move their plants overseas.

Table 36: Vacancy rate by industry, 1992-93 (%)

Industry	Overall	Production workers
All industry	4.26	6.85
Mining	6.75	-
Manufacturing	4.87	6.41
Food products and beverages	2.44	3.15
Textiles, clothing and leather	7.11	8.81
Wood and wood products	6.05	7.37
Paper and paper products	4.27	6.28
Chemical products	3.59	5.27
Non-metallic mineral products	6.76	7.96
Basic metals	2.78	3.83
Fabricated metal products, machinery and equipment	4.26	5.55
Other manufacturing	2.63	2.77
Construction	3.17	-
Transport and communication	8.25	-

Source: Ministry of Labour, *Outlook for employment 1993*.

There has been a long and heated debate in the Republic of Korea about importing foreign manpower. Some fear that it might hold up the process of economic restructuring, aggravate the dual structure of the labour market and possibly raise the unemployment rate for native workers. According to one survey, 48 per cent of firms said that they would hire foreign workers even if they were illegal trainees.

Table 37: Wage increases in the car industry, 1987-92 (%)

Year	All industry	Manufacturing industry	Automobile industry	
			Makers	Suppliers
1987	10.1	11.6	23.6	21.5
1988	15.5	19.6	21.8	18.4
1989	17.8	19.7	3.3	26.9
1990	9.1	9.8	11.3 18.9	14.8
1991	17.5	16.9	9.9 15.4	17.5
1992	15.2	15.7	3.2 11.6	15.2

Source: Korea Automobile Manufacturers Association.

4.1.4 Human resources development planning in the car industry

In the Republic of Korea, the public sector plays a great role in training production workers as well as in human resources development. From 1967 - when public vocational training started - to 1993, about 2 million technical workers were trained. Firms with more than 150 employees are obliged to conduct in-firm training; otherwise they have to pay an allotment for public training. Such government-led HRD policy has made a positive contribution to the national economy by supplying the technically skilled workers required by firms. It is, however, one of the factors that private firms have neglected in conducting their own training programmes.

(a) Hiring new workers

Carmakers in the Republic of Korea require new production workers to have a high school diploma. They prefer male workers less than 32 years old who have completed their military service. For some special processes, they hire graduates from industrial high schools. For assembly line work, however, they do not always prefer industrial high school graduates. One carmaker (maker P hereafter) does not provide newly hired workers with technological education in its training centre but it provides a two-week long general education course. After this short-term training, workers are assigned to the shop floor and receive on-the-job (OJT) training. Maker P has its own training centre. It is not, however, large enough to accommodate all newly hired workers. They say that it was not built for their own training purposes but to fulfil government requirements set out in the Basic Law on Vocational Training and the Basic Law on Vocational Training Promotion.

The other carmaker (maker Q hereafter) has hired new production workers from among graduates of its own vocational training centre since 1981. The company provides a one year programme for trainees, eight hours a day. The trainees know a lot about maker Q in advance, so if any think the company doesn't fit their aptitudes, they may not apply for a job after completing their training course. So newly hired workers are likely to stay longer in the company once they enter it.

(b) Skill formation

As we have seen maker P conducts a two-week long education programme for newly hired workers and then assigns them a job on the shop floor. Their foremen give them instruction as they work. It takes them about three months to become semi-skilled, depending on the job they are assigned. After about two years on the shop floor, they become skilled workers. Job rotation does not take place between work teams, but it happens quite often within a team. Such job rotation stems not from a strategy of having multi-skill workers but from a desire among workers for equalization of job intensity. In the past the hardest jobs were supposed to be done mostly by new workers. As the number of new workers after 1986, team workers began to take turns doing the hard jobs.

Maker P has tried so-called multi-skilling OJT, with some minor exceptions for special workers, since 1990, but it doesn't yet have any comprehensive career development programmes (CDP). After some hesitation, the management drew up a plan to introduce a new personnel policy, including a CDP. Most individual workers seem to be quite positive about moving from a traditional, seniority-based policy personnel system to an ability-based one. However, the labour leadership has been very cautious about putting the issue to the vote, fearing the new system might weaken its position.

In maker Q, it usually takes a year for a new worker to become skilled for jobs in assembly, body, painting lines. With some special processes like die-casting, it takes about three years to become a skilled worker. Multi-skilling is possible only for workers in a job group.

(c) Improvement activities

Besides OJT training, production workers in the car industry in the Republic of Korea conduct off-line improvement activities like suggestions and QC (quality control) circle activities. Through these activities, new workers can learn more about their jobs while experienced workers have opportunities to develop their skills.

It was in the early 1970s that production workers with carmakers began to conduct such activities. Kia Motors started its QC circle in 1972 and its suggestion system in 1973. Hyundai Motors implemented a suggestion system from 1975 and introduced the management codes of QC circles in 1976. Carmakers in the Republic of Korea had cooperative relationships with Japanese carmakers so they learned about suggestions and QC circle activities from the Japanese. Details of the suggestion system suggestion they use, from procedure to organization structure to award system, are almost the same as those of Japanese makers like Toyota (Moden, 1993).

As the Republic of Korea's domestic car market grew and car exports rose from the mid-1980s, these two types of employee participation grew in significance. In most carmakers in the Republic of Korea, employee participation of this sort has taken place for more than 20 years. However, some makers have recently abandoned QC circle activities and introduced new type of group activity instead. The QC circle itself is part of the formal organization of the workplace in all carmakers in the Republic of Korea, so the QC circle leader is in charge of ordinary work on the line as well as QC circle activities.

The suggestion system involves individual workers defining and examining problems and then generating ideas to solve them. They then summarize their ideas on a suggestion form and submit them to their supervisor. The supervisor should review on the shop floor the contents of suggestions from the workers he or she supervises.

The contents of suggestion and QC circle activities can be grouped into six categories: quality, work methods, tool handling, machinery and equipment, so-called 5S and management methods. Every month an evaluation takes place in the department that the individual workers or QC circles belong to. Whether or not a suggestion is adopted is determined at the department level.

At Kia Motors, for example, a suggestion is supposed to be given one of ten grades. The suggestion committee at each level assesses suggestions recommended by its subordinate committees. Once adopted, suggestions proceed to a higher-level suggestion committee and can earn better grades. The amount of award money that goes to the worker who made the suggestion usually depends on the grade earned. Beside award money, some carmakers give additional fringe benefits to those workers showing high performance in improvement activities. Moreover, individual workers' suggestion and QC circle activities are reflected in the personnel evaluations that are conducted periodically.

Table 38: Off-line improvement activities in plants in the Republic of Korea, 1985-93

	1985	1987	1988	1989	1990	1991	1992	1993
Number of suggestions per employee (annual)	10	21	94	38	20	14	23	26
Number of activities per circle (annual)	3.1	3.1	3.7	2.6	1.7	2.0	2.1	1.8

Source: Q auto plant, *Improvement Activities Report*, 1994.

Table 39: Off-line improvement activities of car industries in various countries

	Republic of Korea	Japan	USA	Europe
Number of suggestions per employee (annual)	85	210	0.4	0.8
Adoption rate (%)	44	89	27	30
Workers in QC circles (%)	98	94	35	37

Source: MacDuffie and Pil: *The international assembly plant study*, IMVP Research Briefing Meeting, Berlin, 1994.

4.2 Evaluation of government policies by managers and workers

Maker P had not conducted any systematic training programmes for its workers. The government policy aimed at inducing employers to provide training did not appear to be successful in this company. The company provided some new production workers with irregular training in welding, assembly and painting. Maker P developed a new technical training programme from 1990. This programme covers basic job training in assembling and automation processes for new workers and equivalents. It also provides all employees with lectures on maintenance and quick measures. The training managers say that they set up this programme of their own accord but they do not deny that government vocational training policy was a factor in their introducing the programme. Production workers express the view that the basic vocational training provided in the company's training centres is helpful in teaching workers how to carry out jobs in car production. However, they feel OJT contributes much more to skill formation.

Training managers complain that they can get much reimbursement of their training costs from the government. They say the amount of reimbursement is almost negligible. According to the law, the government reviews the types of training facilities and programmes the employers have invested in and decides whether or not each item qualifies for reimbursement and how much it will pay back.

Certificates of qualification are widely used as a screening or pay-assessing device in the business world: workers with high-level certificates are paid more. This gives workers some incentive to acquire more skills. As in other companies, carmakers use such certificates as a screening device in determining promotion and pay.

Managers in the carmaking industry acknowledge that industrial high school graduates are an invaluable source of skilled manpower which is essential for some special jobs like maintenance, design and quality control.

They also express their overall satisfaction with the availability and quality of college graduates and with the current higher education system. They do, however, feel that engineering colleges should increase their teaching and research staffs and modernize their facilities in order to keep up with the real business world.

The parts suppliers' evaluation of government education/training policies is totally different. Part suppliers always face difficulties in hiring new workers, and they don't feel that current public systems of education and vocational training give them any support. They want the government to take some special measures to help them secure production workers, including allowing them to bring in more foreign workers. They assert that the current system of vocational training allotments should be abolished since the public training system is not beneficial to them. Because of low wages, parts suppliers find it difficult to recruit engineers. They argue that the government should increase both the quantity and the quality of college engineering graduates.

5. The textile industry and labour policies

5.1 The textile industry in the Republic of Korea

The textile industry accounted for 38 per cent of total national exports in the 1960s, thus playing a leading role in the country's economic development. The relative importance of the industry has, however, been declining since 1970, though it remains a major industry. In 1992, the textile industry's share both of total exports and of employment was around 20 per cent (see table 40) and the industry posted a US\$13 billion trade surplus. About 15,000 firms could be classified as belonging to the textile industry, 20 per cent of all manufacturing business concerns. It employed 520,000 people, 19 per cent of all workers in manufacturing industries. Its production value amounted to 22 trillion won, which is 10 per cent of the value of all manufacturing production.

Exports have shown an average annual growth rate of 18 per cent since 1970; they amounted to US\$15.9 billion in 1993, 20 per cent of all the country's exports. In 1993, the textile industry showed a trade surplus of US\$11.9 billion while the national trade balance was US\$1.6 billion in deficit.

In 1992, textile exports amounting to US\$15.8 billion accounted for 6 per cent of world textile exports; the Republic of Korea was the fourth largest textile-exporting country in the world. If we break down this figure, clothing accounts for US\$6.5 billion while yarn and textile fabrics account for US\$8 billion. Exports have grown faster in yarn and textile fabrics than in clothing during the period from 1985 to 1990. The industry has built up its technology and skilled manpower for the past 30 years. It has the capacity to produce 1.46 million tons

of chemical fibres annually, 8 per cent of the world total; this positions the Republic of Korea as the world's fifth largest country in terms of capacity.

Table 40: The textile industry, 1981-92

	Number of firms (000s)		Number of employees (000s)		Productions (won bn.)		Exports (us\$ bn.)	
	1981	1992	1991	1992	1991	1992	1991	1992
All manufacturing	72	75	2920	2800	206	227	78.8	79.0
Textiles	12	15	550	520	20	22	15.8	15.9
Share of textiles (%)	19.4	20.0	18.8	18.6	9.7	9.7	20.0	20.1

Source: Bureau of Statistics: *Monthly Reports on Industry*. Bureau of Tariffs, *Annals of Trade Statistics*.

Table 41: Employment in manufacturing and textile industries, 1988-92 (000s)

	1988	1990	1991	1992	Growth (%)*
Manufacturing	4 667	4 847	4 936	4 673	-
Textiles	742	544	530	520	-9.4
Upstream	136	188	113	96	-8.3
Downstream	606	426	425	404	-9.6

Source: Korea Federation of Textile Industries.

* Average annual growth rate.

5.1.1 Cotton and wool textiles and chemical fibres industries

Since the early 1980s, the Korean cotton and wool textiles industry has been sluggish. Protectionism in some advanced countries, a worldwide economic slowdown, and aggressive marketing of low-priced goods by developing countries have combined to erode the Republic of Korea's export markets. Domestically, major wage hikes, a lack of skilled labour and a decline in demand as a result of the decrease in downstream exports have had an adverse impact on the industry.

The Republic of Korea has failed to respond swiftly to changing consumer tastes and improve technologies for new materials. Its cotton and wool textiles industry is a conventional mass production industry with old or obsolete facilities. At present, the industry is competitive neither with advanced countries in technology and quality nor with developing countries in price.

Table 42: Hourly wages in the textile industries of major countries, 1990-93
(US\$ per hour)

Country	1990	Rank	1991	Rank	1993	Rank	(1993/91)	(1991/90)
Germany	16.46	6	16.96	7	20.50	6	20.9	3.1
Italy	16.13	8	17.31	6	16.20	11	-6.4	7.3
Japan	13.96	11	16.37	8	23.65	1	44.4	17.3
Rep. of Korea	3.22	23	3.60	23	3.66	26	1.5	11.9
Taiwan	4.56	22	5.00	22	5.76	22	15.2	9.7
Hong Kong	3.05	24	3.39	24	3.85	24	13.7	11.1
China	0.37	47	0.34	49	0.36	54	7.4	-8.8
Thailand	0.92	40	0.87	41	1.04	44	18.7	-5.0
Indonesia	0.25	50	0.28	52	0.43	50	49.60	13.8

Source: Werner International Managing Consultants.

Market conditions are expected to become slightly more favourable to the industry in the future as it provides clothing, one of life's necessities. Consumer preference is shifting from synthetic fibres to natural fibres in line with improvements in living standards. As the World Trade Organization system takes effect, the Republic of Korea's textile industry is expected to benefit from the agreement: export quotas will be abolished over the long term and free trade between countries will be guaranteed. The abolition of quotas could be of great benefit to textile manufacturers in the Republic of Korea.

5.1.2 The clothing industry

The clothing industry is export-oriented and has been leading the nation's economic development for about 30 years. The industry led the Republic of Korea's most recent surge in economic growth from 1985 to 1989, with exports growing at an average rate of 20 per cent annually. From the late 1980s, the industry lost its competitive edge because of an acute shortage of skilled workers, as well as sizeable increases in labour costs. Other developing countries with cheaper labour quickly eroded the Republic of Korea's share in the world market.

As a result, the clothing industry's share of the nation's exports dropped from 14 per cent in 1989 to 7 per cent in 1993. The share of clothing in the textile industry's exports declined from 58 per cent in 1989 to 37 per cent in 1993, a drop of 21 per cent.

5.2 The labour market in the textile industry

As the textile industry depends heavily on export markets, it faces stiff competition from both inside and outside the country. Almost 70 per cent of total production is sold overseas. The industry's competitiveness has stemmed from utilizing cheap labour, so pay levels are slightly low and working hours somewhat long compared to most other industries (see table 43). As the labour movement became active from 1987, the textile industry witnessed sharp wage increases. However, the wage difference between the textile industry and other

industries persisted. As the government put more emphasis on heavy and chemical industries and high-tech industries, light industries like textiles, footwear and toys came to be regarded as sunset business and workers of high calibre avoided looking for jobs in the textile industry. The labour turnover rate in the clothing industry is extremely high at 5.7 per cent a month. Jobs with textile-related firms have not been attractive to job seekers.

Table 43: Pay and working conditions by industry

Industry	Monthly working hours	Monthly earnings (won)	Monthly labour turnover	Number of employees
Textile	229.2 (35.5)	669 307	3.79	260 326
Clothing	215.6 (25.5)	551 548	5.69	153 933
Oil refining	203.9 (20.8)	1 222 984	1.00	3 195
Chemicals	209.7 (21.8)	877 012	1.99	151 431
Basic metal	228.8 (39.3)	1 204 201	2.13	94 922
Fabricated metals	232.1 (40.4)	830 218	3.22	148 092
Machinery	218.6 (38.1)	845 590	3.45	250 976
Cars	227.2 (38.1)	834 315	2.76	176 617
Construction	207.5(14.9)	1 985 512	4.73	272 530
Retail	220.7 (23.9)	756 766	2.73	76 126

Source: Ministry of Labour, 1993.

Table 44: Vacancies in the textile industry

Branch of industry	Required number of employees	Current number of employees	Vacancies	Vacancy rate (%)
Textile industry	481 000	424 000	57 000	11.8
Fibre raw material	87 000	79 000	8 000	9.2
Fabrics	83 000	69 000	14 000	16.9
Dyeing	74 000	65 000	9 000	12.3
Women's clothing	181 000	164 000	17 000	9.4
Knitted clothing	51 000	43 000	8 000	15.7
Linen	5 000	4 000	1 000	20.0

Source: Korea Federation of Textile Industries, 1993.

According to a survey conducted by the Korea Federation of Textile Industries, the industry had 57,000 job vacancies in 1993 and a vacancy rate of 12 per cent (see table 44). Recently sharp wage increases have lowered profitability in the textile industry. As the industry is labour-intensive, wage increases mean more a greater addition to manufacturing costs than in other industries. In the textile industry, labour's share in total manufacturing cost is 13 per cent; subcontracting labour accounts for a further 16 per cent (see table 45). So the industry suffers from high wage and a labour shortage, which are a major setback to competitiveness.

Table 45: Breakdown of manufacturing costs by industry (%)

Industry	Material cost	Labour cost	Expenses	Subcontract	Depreciation
All manufacturing					
Textile	65.2	11.7	23.2	(5.6)	(5.8)
Electricity	56.7	12.8	30.5	(15.6)	(3.9)
Machinery	66.4	12.0	21.6	(4.2)	(6.0)
Basi+c metal	61.5	13.6	24.9	(10.8)	(3.7)
Iron and steel	64.0	8.9	27.1	(3.9)	(11.5)
Cars	62.0	8.5	29.5	(3.8)	(13.5)
	76.9	11.0	12.1	(0.0)	(5.3)

Source: Bank of Korea, 1992.

A vacancy rate of almost 12 per cent in the textile industry indicates that some small to medium-size firms would have great difficulty in securing new workers. As we can see from table 43, the labour turnover rate in the clothing industry is the highest among manufacturing industries. If we look at the structure of manufacturing costs, the share of labour in total cost is quite high in the textile industry compared with other manufacturing industries. Because of stiff competition from home and abroad, firms in the textile industry cannot afford to pay their production workers wages as high as those paid in other industries.

Table 46: Assignment of foreign trainees by industry

Industry	Persons	Industry	Persons
Textiles	5 666 (6,819)*	Leather, bag, footwear	600
Basic metal	800	Fabricated metal	1 900
Rubber, plastic	2 000	Machinery	1 400
Electricity	1 000	Visual communications	1 300
Cars	1 800	Furniture	600
Others	2 945	Total	20 000

Source: Korean Federation of Small Business, April 1994.

Note: () is the number of workers requested.

To get round these problems, textile firms have rushed overseas for cheap and abundant labour, otherwise the industry could have reached a crisis point when it was no longer possible to operate from the Republic of Korea. The government's Cooperation programme for foreigners' industrial technology training", administered through the Korea Federation of Small Businesses, allows member companies to apply for up to 20 foreign workers. To be eligible to apply for foreign workers, a company should be able to offer accommodation and employ fewer than 300 regular workers. In 1994, the Federation received applications for 24,822 foreign workers from 5,300 firms. The textile industries were assigned 5,655 foreign workers. Most textile firms hope that this programme will persist and that the ceiling on the size of foreign workforce increase from the current 20,000 to 100,000. They are also asking

the government to allow larger firms employing more than 300 workers to apply and to extend the training period from the maximum two years to four or five years.

5.3 Education and vocational training

Technological staff manpower in the textile industry are educated in colleges, departments majoring in textile engineering, clothing and clothing-related subjects or in private or public training centres. Technicians receive their education in various types of vocational training institute and in the affiliated schools of business firms. However, education at four-year colleges and two-year junior colleges focuses on theory, so students spend most of their time learning theories rather than practising them. As a result, those colleges cannot supply the textile industry with specialist graduates. Various private training centres provide students with more practice-oriented training. The problem with these centres is that they are not accredited schools so their graduates may face unfavourable treatment in personnel affairs after they are hired.

The government has allowed firms to operate affiliated high schools for young workers at their own expense. Since many young workers can study while working, these schools have helped manufacturing firms to secure a stable supply of technicians. As people's incomes go up, however, graduates from these schools have tended to leave the workplace to continue their education. Nowadays, it is getting harder and harder to recruit people to these high school programmes. As an increasing number of production workers move to other industries or continue their study in two-year or four year colleges, companies are worried about the loss of experienced workers. Some large companies have set up their own in-firm colleges to provide their workers with higher education. Since they treat graduates from these in-firm colleges the same as those with ordinary college degrees, they could acquire a good reputation among production workers.

As already mentioned, private training centres offer programmes that are focused on practice rather than theory; they usually last only 6 to 12 months. Those centres related to the textile industries are most likely to offer fashion design courses. Trainees can be divided into three groups: graduate from high schools, two-year colleges, and four-year colleges. The fact that these are not accredited schools - which may have an adverse effect on trainees after graduation, is a major obstacle to the growth of these private centres. Human resources managers think that the government should confer accreditation on these centres if they satisfy certain standards relating to facilities and teaching staffs. They could also be operated as training centres where companies can send their experienced workers for further training so that they can respond to the changing business world more flexibly.

Table 47: Textile-related departments in colleges

		Junior colleges				Colleges			
		1989	1990	1991	1992	1989	1990	1991	1992
Total	No. of schools	117	118	126	128	104	115	121	
	No. of graduates	85 129	93 166	106 417	111 855	166 845	175 586	178 631	184 868
Textile majors	No. of depts.	6	4	5	6	6	16	16	16
	No. of graduates	261	301	378	375	375	665	780	786
Apparel Majors	No. of schools	32	33	41	42	42	42	58	57
	No. graduates	2 197	2 365	2 519	2 614	2 614	1 179	1 915	2 112

Source: Ministry of Education, *Yearbook of educational statistics*.

Under the WTO system, more competition from abroad is expected. It will therefore be of the utmost importance to keep on developing advanced technology. To cope with such challenges, the country should make more effort to educate and train students to be excellent scientists and engineers by improving higher education.

As pointed out earlier in this study, the ratio of graduates from industrial high schools to total high school graduates dropped from 13 per cent in 1981 to 9 per cent in 1989 (see table 48). This made the labour shortage problem worse in all manufacturing industries, especially textiles.

Table 48: Industrial high schools

		1989	1990	1991
Total	Number of high schools	1 702	1 735	1 757
	Number of graduates	754 496	740 288	722 288(A)
Industrial high schools	Number of departments	113	127	150
	Number of graduates	63 955	62 173	63 012(B)
Textile-related high schools	Number of departments	60	59	50
	Number of graduates	1 039	986	964 ^c

Source: Korean Federation of Textile Industries. Strategies to solve the labour shortage in the textile industry 1994.

As the number of industrial high schools decreases, the basis for supplying technicians is being eroded. It is feared that the imbalance between demand for and supply of technicians may become more serious in the future.

In the clothing industry, it takes only two or three months for new workers to learn basic skills through OJT training, so neither managers nor workers feel that formal vocational

training is needed. Among clothing firms with more than 150 employees, only a few have their own training facilities. Most of these firms therefore have to pay an allotment to the government, as stipulated in the Basic Law on Vocational Training. However, almost no students entering public vocational training centres aim to find jobs in clothing firms. In fact, most of them start their own businesses after graduation. Managers in the clothing industry argue, therefore, that the government should exempt them from the obligation to pay the training allotment given that the public vocational training system plays no part in training or supplying the technicians needed in the industry.

6. Summary and conclusions

During the early stages of economic development in the 1960s, the Republic of Korea enjoyed high rates of employment growth as labour-intensive light industries grew rapidly. In 1967, during the period of the first five-year economic development plan, vocational training for technicians was formally introduced for the first time with the passing of the Vocational Training Act. At that time the demand for skilled labour was still limited. Workers in the Republic of Korea had relatively high levels of academic attainment and the skills required in light industries could generally be learned in two to three months. Light industries depended for their competitiveness on the nation's abundant supply of cheap labour. The Republic of Korea was quite successful in developing manufacturing industries rapidly and securing overseas markets; new jobs were created as manufacturers and exporters were given extensive financial and tax incentives by the government.

It was in the mid-1970s that the government switched its policy focus from light industries to heavy and chemical industries and introduced the Basic Law on Vocational Training to promote public and private vocational training. In the Republic of Korea, there are three types of vocational training: public vocational training, vocational training at business establishments and certified vocational training. All three were evolved according to the Basic Law on Vocational Training of 1976 and its revised versions. To overcome the so-called 'free-rider' problem in human resources development, the government requires the larger business firms to pay into the training allotment fund for public training. If they choose to conduct training themselves, they can get reimbursement from the government. The government decides whether and to what extent the contents of firms' training programmes can be regarded as general, or not 'firm-specific', before it allows any refunds.

Training institutions, public or private, conduct four different types of course, depending on trainees' qualification and needs: basic training for new workers, advanced training, retraining and further training for experienced workers.

Vocational training in the Republic of Korea is also linked to the skill qualification system. The National Skill Qualification Act of 1973 classifies technicians into four different

qualification categories: master, first-grade technician, second-grade technician and assistant technician.

The educational system in the Republic of Korea consists of six years' primary school education, three year's middle (junior high) school education, three year's high school education (general or vocational), and two or four years college education. Sixty-nine per cent of middle school graduates went on to high school in 1965, 85 per cent in 1980 and almost 98 per cent in 1991. Among those high schools, vocational high school students accounted for 60 per cent in 1975, but the figure dropped to 45 per cent in 1980 and to a record low of 36 per cent in 1989.

There has been chronic excess demand for higher education: the government imposes tight regulations on colleges, covering both student enrolment and course contents, while the people of the Republic of Korea have a great aspiration for higher education. On the other hand, college graduates have been in a state of excess supply on the labour market. The unemployment rate has been higher among college graduates than any other group.

As income levels rise, more people in the Republic of Korea tend to send their children to general high school rather than vocational high school because higher education is thought of as an important symbol of social status and it is difficult for graduates from vocational high school to go on to college. Moreover, since it costs more to run vocational high school because more investment in facilities and equipment is needed, high-quality education has not generally been provided to students by vocational high schools.

The demand for vocational training has also dwindled. The national system of vocational education was considered successful until the early 1980s. However, it has remained almost unchanged since the mid-1970s, although the economy has witnessed high rises in wages, a shift from light industries to heavy and chemical industries, and a continuous expansion of tertiary industry, which offers better job opportunities and more favourable working conditions than manufacturing industries. Since the old vocational training system aimed mainly to provide basic training for young workers, the demand has decreased as the economy has advanced.

Since liberalization of the labour movement in 1987, workers in larger firms, mostly organized, have enjoyed substantial wage gains each year as a result of their greater bargaining power. As wage differentials between large and small firms have widened, it becomes more and more difficult for small manufacturing companies to hire young production workers. Many small manufacturing firms apply for an allocation of foreign workers. In 1994, the total number of legal foreign workers in the Republic of Korea was 20,000.

Among car makers, where wage levels are very high, there is no difficulty in securing young workers. Most carmakers provide new employees with vocational training as stipulated by the government. However, HRD managers in car-making firms feel that their own on-the-job training (OJT) is more important. Some makers comply with government policy on vocational training so as to get as much reimbursement as possible from the government. The training period for new workers often depends on how heavy the government training levy is. Carmakers argue that they could train their workers more efficiently without government

regulations. HRD practitioners also complain that they cannot get enough reimbursement even if they invest more in training facilities and courses because of government regulations. What they want with regard to human resources development is basically more freedom or deregulation.

Small car parts suppliers, on the other hand, suffer from typical labour problems such as low wages, high labour turnover and labour shortage just as any other small firms do. Since vocational high school graduates are in excess demand, they usually do not apply for jobs in small manufacturing firms. Small firms in the textile and clothing industries face similar problems. Most train their workers through OJT programmes in short periods of time. In these industries, most trainees in public vocational training centres aim to start their own business rather than to be employed in small firms.

Under the current training system, firm-specific needs are neglected. The government policy for vocational training at corporate level puts too much emphasis on the general and does not encourage private employers to teach firm-specific skills to their new employees.

The government introduced an employment insurance system in 1995. This has three major components: unemployment benefit, employment stabilization and human resources development. Since the human resources development programme under the employment insurance system deals with the same task as the old vocational training system, the government plan to abolish the current system of mandatory vocational training at corporate level from 1998. Firms will then be able to choose how and what to teach their workers to enhance their skill levels.

Early in 1996, the special Committee for Educational Reform presented its second report to the president. It includes two important changes in government policy on vocational training. First, the government will not stick to the principle that the number of vocational high schools should be the same as that of general high schools. Second, vocational education at high school level will be linked to higher education. Under the current system, it is very difficult for graduates from vocational high schools to go on to higher education. Vocational education at high school level will be diversified, so new high schools specialized in fields such as international relations, design, information and cars may appear in near future. According to the reform plan, new colleges will also offer higher vocational education which will be open to a wide range of applicants including vocational high school graduates. The vocational high school will thus be the starting point for higher vocational education or lifetime education.

This change will probably improve national human resources development. Vocational education at high school level cannot satisfy the growing demand for high-quality manpower. To enhance the competitiveness of business firms in the Republic of Korea it is necessary that more employees should receive advanced vocational training. The new policy gives more opportunities for further vocational education to high school graduates.

It should be noted that workers' willingness to develop their human capital depends on how much they can earn in the labour market. Labour shortages and high labour turnover in small manufacturing firms stem from the big wage gap between large and small firms. The

high wages paid by larger firms are largely due to labour unions' bargaining power and firms' market leadership in the domestic market. Workers at small firms cannot exercise such bargaining power. The current wage structure is a significant cause of inefficient labour allocation. The government of the Republic of Korea should therefore take some measures to make its domestic market more competitive. New human resources development policies are more likely to succeed under a new market structure.

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