

KIEP Working Paper No. 93-08

December 1993

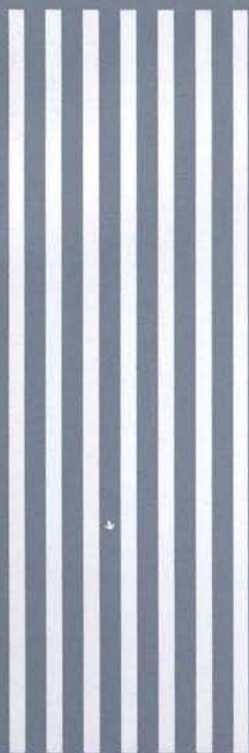
**CHANGING PATTERNS OF KOREA'S  
TRADE IN GOODS AND SERVICES**

**Jin-Soo Yoo**

**KIEP**  

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**Working Paper**



**KOREA INSTITUTE FOR  
INTERNATIONAL  
ECONOMIC POLICY**

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**1993. 12**

An earlier draft of this paper was presented at the Pacific Economic Outlook Specialists Meeting held in Osaka, Japan on September 27~28, 1993. The views expressed in this paper are those of the author and do not necessarily represent the views of KIEP.

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## I . Introduction

It is well-known that countries in the Pacific region have experienced economic dynamism for the past two decades. The Gross Domestic Product(GDP) of ANIEs recorded 8.5%-9.4% growth rates in the 70's and 6.3%-9.6% in the 80's. Even though growth rates have dropped moderately in the 90's due to structural adjustments and economic recession among developed countries, they are still maintaining relatively high levels. As is represented in 〈Table 1〉, most of the ASEAN countries have also recorded growth rates higher than 5% in the 80's. The recent growth of manufacturing

〈Table 1〉 Growth rates of GDP and manufacturing sectors in Asia-Pacific Economies

(Unit: %)

Country	Growth rate of GDP		Growth rate of manufacturing sectors	
	1980-85	1985-90	1980-85	1985-90
ANIEs				
Korea	8.4	10.8	10.8	13.3
Singapore	6.2	7.9	1.2	12.7
Hong Kong	5.6	7.8	5.8	6.2
Taiwan	6.8	9.2	6.5	6.2
ASEAN				
Indonesia	4.7	6.3	8.7	13.0
Thailand	5.5	10.0	0.4	14.2
Malaysia	4.8	7.5	6.7	10.9
Phillipines	-0.1	4.6	19.2	14.8
Others				
China	10.1	7.9	12.1	14.6
Developed Country				
U.S.A.	2.6	2.8	3.1	3.7
Japan	3.8	4.7	3.6	4.7
Canada	2.9	3.1	3.0	3.7
Australia	3.2	3.3	0.8	2.8
New Zealand	2.8	0.7	2.7	-1.0

Source: Ro, Jae Bong & Ryou, Jai Won, 1993.

sectors among ASEAN countries is even more surprising. The average growth rates among ASEAN-4 countries (Indonesia, Malaysia, Thailand and Philippines) in the manufacturing sector were more than 10% in the late 80's. Economic performance of developed countries in the Pacific region was not as good as developing countries, but they showed decent growth during the last few decades.

Korea has achieved rapid economic growth with its export-oriented industrialization policy since the 60's. The average annual growth rate of Korea's real Gross National Product (GNP) during the 1962-1992 period was almost 8%, and the average annual growth rate of Korea's real GNP in the late 80's was above 10%. In 1992, Korea's per capita GNP became US\$ 6,749, which is more than 77 times of that in 1962.

The increase in exports is even more amazing. For the past 30 years, merchandise exports grew at an average annual rate of 27% and trade volume also grew at an average annual rate of 13%. As a result, Korea became the 13th largest export country and the 12th largest trading country in 1992. Korea's merchandise exports totaled US\$ 71.9 billion, which is about 26% of its GNP. With the increase of merchandise trade, trade in services also rose rapidly. In 1992, Korea's export and import of services were US\$ 16.0 billion and US\$ 18.6 billion, respectively. These figures amount to about 23% of Korea's total merchandise exports and imports, respectively.

〈Table 2〉 presents the volume of Korea's merchandise trade, volume of its service trade and their relative sizes to GNP. In 1971, the ratio of merchandise trade volume to GNP was 36.7%. With the export-oriented growth policy, though, the ratio went up to 70.9% in 1981. The ratio showed a decrease recently because of the recent slowdown in export growth. As a result, the ratio recorded 51.8% in 1992. The ratio of service trade volume to GNP also showed an increase in the 70's and, then, a decrease in the 80's. The ratio recorded 8.2%, 20.8% and 11.8% in 1971, 1981 and 1992, respectively.

〈Table 2〉

## Trends in Korea's foreign trade

(Unit: US\$ million, %)

	1971	1981	1992
Export in goods(X)	1,068	21,254	75,169
Import in goods(M)	2,394	26,131	77,316
X + M (=A)	3,462	47,385	152,485
Export in services(R)	487	6,329	16,010
Import in services(P)	295	7,562	18,625
R + P (=B)	781	13,890	34,635
Current GNP(C)	9,483	66,828	294,500
B/A(%)	22.6	29.3	22.7
B/C(%)	8.2	20.8	11.8
A/C(%)	36.7	70.9	51.8

Source: The Bank of Korea, *Monthly Balance of Payments*.

After its chronic trade deficit until the mid 80's, Korea experienced a trade surplus in the late 80's because of the so-called "three lows": low oil price, low international interest rates and low value of the Korean won. Korea's trade surplus recorded US\$ 3.1 billion, US\$ 6.3 billion, US\$ 8.9 billion and US\$ 0.9 billion in 1986, 1987, 1988 and 1989, respectively, which were 4.9%, 7.7%, 8.4% and 0.7% of the GNP, respectively.

Unfortunately, Korea could not maintain its trade surplus, which was attributed to the considerably weakened competitiveness of Korean products. The trade surplus in the late 80's resulted in the appreciation of the Korean won and severe labor disputes caused wage increases. The Korean won appreciated by as much as 24% in the late 80's, and wages doubled during the same period.

Recently, economic recession in developed countries is working against Korean exports. Protectionist sentiments are prevailing in major countries as well, because of the high unemployment rate in these countries. Korea is also experiencing difficulties in acquiring high technology and in attracting foreign direct investments. Accordingly, the growth rate of Korea's exports, especially to developed countries, dropped

recently. The average annual growth rate of exports during the 1989-1992 period recorded 6.0%, which is considerably lower than the 80's. The average annual growth rate of imports, on the other hand, recorded 12.3% during the same period.

## **II . Changing patterns in Korea's merchandise trade**

### **1. Exports and imports by commodity**

With the rapid increase of Korea's merchandise exports, Korea's exports experienced a structural change. In the 60's and 70's, Korea's merchandise export growth was led by light-industry products, such as textiles, footwear, toys, etc. As 〈Table 3〉 shows, light-industry products were Korea's main export products in 1980. The ratio of light-industry product exports to the total Korean exports was 48.4% in 1980. But, in 1991, light-industry products became less important, while heavy-industry products gained in importance. The ratio of light-industry product exports to total Korean merchandise exports dropped to 32.4% in 1992. The ratio of exports in heavy-industry products to the total Korean merchandise exports, on the other hand, increased rapidly, reaching 60.4% in 1992.

In terms of the increase in exports during the 1980-1992 period, motor vehicles, machinery and equipment, and sound recorders and VTR's were among the top, while food and direct consumption goods, tires and tubes were among the bottom. Nonetheless, textiles and their products are still important export items accounting for 1/5 of Korean total exports.

This structural change can also be described in terms of factor intensity. In the 80's, the relative importance of labor-intensive export sectors, such as clothing, textiles and footwear, declined, while capital- and technology-intensive sectors, such as electric appliances, electronic products and transportation equipment, gained in importance.



The structural change has continued even recently. In the first half of 1993, Korea's merchandise exports in labor-intensive sectors, such as footwear, toys and dolls, showed a 24.4% and 37.6% decrease, respectively. Korea already began to lose

〈Table 3〉 **Changing patterns of Korea's merchandise exports by commodity**  
(Unit: US\$ million, %)

	1980		1986		1992	
	volume	share	volume	share	volume	share
Total	17,505	100.0	34,715	100.0	76,632	100.0
Food & direct consumption goods	1,258	7.2	1,684	4.9	2,347	3.1
Fresh, chilled or frozen fish	437	2.5	574	1.7	666	0.9
Crude materials & Fuels	492	2.8	1,199	3.5	3,171	4.1
Petroleum & Derivatives	333	1.9	610	1.8	1,684	2.2
Light-industry products	8,469	48.4	14,451	41.6	24,828	32.4
Textiles	4,939	28.2	8,229	23.7	15,008	19.6
Tires & Tubes	477	2.7	521	1.5	1,053	1.4
Travel goods	262	1.5	622	1.8	894	1.2
Sporting goods	118	0.7	224	0.7	435	0.6
Footwear	871	5.0	2,044	5.9	2,911	3.8
Toys	209	1.2	757	2.2	479	0.6
Heavy-industry products	7,287	41.6	17,381	50.1	46,285	60.4
Chemical products	290	1.7	676	2.0	3,456	4.5
Metal products	2,426	13.9	3,355	9.7	7,020	9.2
Machinery & Equipment	480	2.7	1,935	5.6	7,550	9.9
Electronic products	1,640	9.4	4,169	12.0	12,774	16.7
Railway vehicles	261	1.5	294	0.9	1,192	1.6
Motor vehicles	94	0.5	1,378	4.0	3,147	4.1
Vessels & Floating structure	618	3.5	1,815	5.2	4,113	5.4
Sound recorders & VTRs	132	0.8	751	2.2	1,504	2.0

Source: The Bank of Korea, *Monthly Balance of Payments*.

its competitiveness in some sectors which are capital-intensive as well as labor-intensive. For example, its exports of containers decreased by 37.5% in the first half of 1993. On the other hand, Korea's exports in many capital- and technology-intensive industries recorded a sharp increase. In the first half of 1993, its exports of iron, industrial electronics, electronic machinery, general machinery and transportation equipment(including automobiles) increased 27.8%, 31.2%, 145.7%, 26.0% and 54.4%

(75.9% in automobiles), respectively.

The structural changes in Korea's merchandise exports can also be inferred from analyzing the change in comparative advantage of Korea's manufacturing sector.

〈Table 4〉 shows the computed results of the revealed comparative advantage(RCA) index of Korea's manufacturing sector and changes experienced during 1980-1991. The most index for revealed comparative advantage is defined as follows:

〈Table 4〉 Reveled comparative advantage of Korean manufactured goods

Commodity	Classification		RCA			change
	ISIC	SITC	1980	1985	1991	80-91
FOOD	311/2	01, 02, 03, 046-8, 05, 06, 08, 09	0.91	0.82	0.51	-
BEVERAGES	313	11	0.01	0.03	0.11	+
TOBACCO PRODUCTS	314	12	2.55	1.09	0.17	-
TEXTILES	321	65	2.17	1.69	3.08	+
CLOTHING	322	84	7.07	6.10	6.30	-
LEATHER PRODUCTS	323	61	1.20	0.75	1.83	+
FOOTWEAR	324	85	7.06	6.75	5.63	-
WOOD PRODUCTS	331	63	3.27	0.28	0.07	-
FURNITURE	332	82	0.30	0.33	1.17	+
PAPER PRODUCTS	341	64	0.22	0.19	0.28	+
PRINTING	342	892	0.12	0.10	0.23	+
CHEMICAL PRODUCTS	351	51, 52, 56, 584, 591	0.37	0.19	0.51	+
OTHER CHEMICAL PRODS	352	53, 54, 55, 57, 592, 598	0.12	0.09	0.32	+
PETROLEUM REFINING	353	334	0.44	0.89	0.41*	+
OTHER PETROLEUM PRODS	354	323, 335	0.66	0.37	0.71*	+
RUBBER PRODUCTS	355	62	1.76	1.83	1.82	+
PLASTIC PRODUCTS	356	58, 583, 585	0.17	0.24	0.87	+
PORCELAIN	361	666	2.62	2.11	0.75	-
GLASS	362	664, 665	0.22	0.32	0.48	+
NON-METAL PRODUCTS	369	661, 662, 663	0.74	1.16	0.75	+
IRON	371	67	1.59	1.66	1.72	+
NON-IRON METALS	372	68	0.14	0.08	0.27	+
METAL PRODUCTS	381	69	1.26	1.47	1.18	-
MACHINERY	382	71, 72, 73, 74, 75	0.09	0.26	0.21	+
ELECTRIC & ELECTRONIC	383	76, 77	1.79	1.86	2.61*	+
TRANSPORTATION EQUIP.	384	78, 79	0.05	0.26	0.85*	+
PRECISION MACHINERY	385	87, 88	0.52	0.43	0.52*	0
OTHER MANUFACTURED	390	894, 898, 899	3.05	3.28	3.50	+

Note: \* represents the RCA index in 1990.

Source: Ryou, Jai Won 1991.

Korea Foreign Trade Association, *Foreign Trade Statistics*, 1980, 1985, 1990, 1991.

OECD, *Foreign Trade by commodities*, 1980, 1985, 1990, 1991.

$$RCA_{ij} = \frac{X_{ij}/X_i}{X_{wj}/X_w} \quad \begin{array}{ll} > 1 : \text{has revealed comparative advantage} \\ < 1 : \text{no revealed comparative advantage} \end{array}$$

where  $X_{ij}$  = exports of country  $i$  in industry  $j$

$X_i$  = total exports of country  $i$

$X_{wj}$  = world exports in industry  $j$

$X_w$  = world total exports

〈Table 4〉 confirms the fact that Korea's competitive advantage in certain labor-intensive sectors, such as clothing and footwear, declined in the 80's, while Korea's competitive advantage in capital- and technology-intensive sectors, such as electric and electronic products, transportation equipment and machinery rose during the same period.

〈Table 5〉 **RCA of Korean manufactured goods and its change.**

	<b>RCA&gt;1</b>	<b>RCA&lt;1</b>
RCA Increasing	321, 323, 332, 355, 371, 383, 390	313, 341, 342, 351, 352, 354, 356, 362, 369, 372, 382, 384
RCA Decreasing	322, 324, 381	311, 312, 314, 331, 353, 361

In 〈Table 5〉, products reported in 〈Table 4〉 are grouped into 4 categories: 1) RCA index  $> 1$  (in 1991) and increasing, 2) RCA index  $> 1$  and decreasing, 3) RCA index  $< 1$  and increasing, 4) RCA index  $< 1$  and decreasing. The first category represents products in which Korea has a comparative advantage and its competitiveness is increasing. The second category represents products in which Korea has a comparative advantage but its competitiveness is decreasing. The third category represents products in which Korea has a comparative disadvantage but its competitiveness is increasing. And the last category represents products in which Korea has a comparative disadvantage and its competitiveness is decreasing.

Products for which the RCA index is increasing and greater than 1 are: Fibers (ISIC 321; SITC 65), leather and leather products (ISIC 323; SITC 61), furniture (ISIC 332; SITC 82), rubber products (ISIC 355; SITC 62), iron and steel products (ISIC 371; SITC 67), electric and electronic products (ISIC 383; SITC 76,77), and other manufactured goods (ISIC 390; SITC 894, 898, 899). Products for which the RCA index is decreasing but still greater than 1 are: Clothing (ISIC 322; SITC 84), footwear (ISIC 324; SITC 85), and metal products (ISIC 381; SITC 69).

Products for which the RCA index is increasing but still less than 1 are: Beverages (ISIC 313; SITC 11), paper products (ISIC 341; SITC 64), printed products (ISIC 342; SITC 892), industrial chemical products (ISIC 351; SITC 51, 52, 56, 584, 591), other chemical products (ISIC 352; 53-55, 57, 592, 598), other petroleum products (ISIC 354; SITC 323, 335), plastic products (ISIC 356; SITC 582, 583, 585), glass (ISIC 362; SITC 664, 665), other non-metal products (ISIC 369; SITC 661-663), non-iron metals (ISIC 372; SITC 68), machinery (ISIC 382; SITC 71-75), and transportation equipment (ISIC 384; SITC 78, 79). And finally, products for which the RCA index is decreasing and less than 1 are: Foods (ISIC 311, 312; SITC 01-03, 046-8, 05, 06, 08, 09), tobacco products (ISIC 314; SITC 12), wood products (ISIC 331; SITC 63), petroleum refining products (ISIC 353; SITC 334), and porcelain products (ISIC 361; SITC 666).

There has also been a structural change in merchandise imports. <Table 6> shows that the share of imports to be re-exported increased from 26% in 1980 to 31% in 1992, while the share of imports for domestic use declined from 74% in 1980 to 69% in 1992. Among food and consumer goods, import volume of consumer non-durable goods increased more than 10 times during the 1980-1992 period despite its small share. The increase of cereal imports, on the other hand, was quite small during the same period. Among industrial materials and fuels, the increase in imports of metals, chemical products, iron and non-metal products were relatively high.

〈Table 6〉 Changing patterns of Korea's merchandise imports by purpose and commodity

(Unit: US\$ million, %)

	1980		1986		1992	
	volume	share	volume	share	volume	share
Total	22,292	100.0	31,584	100.0	81,775	100.0
By Purpose						
For Re-export	5,787	26.0	12,720	40.3	25,717	31.4
For Domestic Use	16,505	74.0	18,864	59.7	56,058	68.6
By Commodity						
Food & consumer goods	2,687	12.1	3,079	9.7	8,575	10.5
Cereals	1,092	4.9	916	2.9	1,811	2.2
Direct consumer goods	897	4.0	754	2.4	2,816	3.4
Consumer durable goods	72	0.3	120	0.4	867	1.1
Consumer non-durable goods	626	2.8	1,288	4.1	3,081	3.8
Industrial materials & Fuels	14,480	65.0	17,165	54.3	42,620	52.1
Fuels	6,638	29.8	5,024	15.9	14,651	17.9
Metalic Ore	971	4.4	1,289	4.1	2,750	3.4
Producers goods for light industry	2,471	11.1	2,510	7.9	4,836	5.9
Chemical products	1,156	5.2	2,431	7.7	5,124	6.3
Iron & Steel products	982	4.4	1,346	4.3	3,385	4.1
Non-ferreous metals	361	1.6	716	2.3	2,068	2.5
Capital goods	5,125	23.0	11,340	35.9	30,581	37.4
Machinery & Equipment	2,184	9.8	4,630	14.7	13,245	16.2
Electric & Electronic machinery	1,527	6.8	4,351	13.8	10,748	13.1
Precision instruments	178	0.8	433	1.4	1,930	2.4
Transportation equipment	925	4.1	1,157	3.7	3,079	3.8

Source: The Bank of Korea, *Monthly Balance of Payments*.

## 2. Exports and imports by country

To analyze Korea's merchandise trade by country, an Asia-Pacific export and import matrix is provided in 〈Table 7〉. 〈Table 7〉 shows that the countries in the Pacific region have grown increasingly important as Korea's trade partners. The share of Korea's merchandise exports to APEC countries of its total merchandise exports increased from 59.7% in 1980 to 67.1% in 1990. Similarly, the share of Korea's merchandise imports from APEC countries increased from 61.7% in 1980 to 74.3% in 1990. In particular, the increase in the share of ANIEs countries is extraordinary. The

〈Table 7〉 ASIA-Pacific export/import matrix

	World	Asia-Pacific			NIEs			ASEAN 4			U.S.			Japan			Korea				
		80	90	▲	80	90	▲	80	90	▲	80	90	▲	80	90	▲	80	90	▲		
<u>Export</u>	World	100	30.9	40.7	9.8	3.9	8.98	5.08	2.5	3.2	0.7	11.6	14.7	3.1	6.9	6.8	-0.1	0.9	2.3	1.4	
	Asia-Pacific	100	53.6	64.9	11.3	9.6	16.2	6.6	4.7	5.2	0.5	17.8	21.0	3.2	10.0	9.5	-0.5	2.1	3.7	1.6	
	ANIEs	100	61.0	69.0	8.0	9.0	12.7	3.7	10.5	8.1	-2.4	24.6	24.6	0.0	10.0	10.4	0.4	1.0	1.5	0.5	
	ASEAN 4	100	77.2	74.7	-2.5	17.7	23.9	6.2	3.2	3.9	0.7	18.7	18.4	-0.3	34.5	23.0	-11.5	1.7	4.1	2.4	
	U.S.	100	38.7	49.2	10.5	6.6	11.0	4.4	2.8	2.8	0.0	-	-	-	9.4	11.4	2.0	2.1	3.6	1.5	
	Japan	100	55.0	66.2	11.2	14.5	21.4	6.9	7.0	8.0	1.0	24.5	29.2	4.7	-	-	-	4.1	6.3	2.2	
	Korea	100	59.7	67.1	7.4	7.3	12.6	5.3	5.0	5.9	0.9	26.5	26.3	-0.2	17.4	17.5	0.1	-	-	-	
	<u>Import</u>	World	100	32.2	38.1	5.9	3.6	6.6	3.0	3.0	2.8	-0.2	12.5	11.8	-0.7	7.0	9.0	2.0	0.8	1.7	0.9
		Asia-Pacific	100	53.8	63.5	9.5	6.6	11.8	5.2	7.5	5.6	-1.9	15.2	15.1	-0.1	11.8	15.1	3.3	1.6	3.3	1.7
		ANIEs	100	68.1	75.7	7.6	7.0	10.4	3.4	11.2	8.2	-3.0	17.4	17.0	-0.4	23.0	23.0	0	1.4	2.3	0.9
ASEAN 4		100	67.8	99.5	31.7	13.7	20.0	6.3	4.8	32.6	27.8	17.0	13.8	-3.2	24.2	25.4	1.2	2.0	3.3	1.3	
U.S.		100	42.5	56.9	14.4	7.1	12.2	5.1	4.4	3.6	-0.8	-	-	-	12.8	18.0	5.2	1.7	3.7	2.0	
Japan		100	50.9	59.2	8.3	5.2	11.1	5.9	16.3	10.9	-5.4	17.4	22.5	5.1	-	-	-	2.2	5.0	2.8	
Korea		100	61.7	74.3	12.6	2.	5.4	3.0	5.9	5.9	0	21.9	24.0	2.1	26.3	29.1	2.8	-	-	-	

Source: Han, Hong-Yul, 1993

ANIEs countries' share in Korea's exports rose from 7.3% in 1980 to 12.6% in 1990, which is more than a 5.3% point increase in ten years. Their share in Korea's imports also rose from 2.4% in 1980 to 5.4% in 1990.

In addition, Japan's share in Korea's imports increased from 26.3% in 1980 to 29.1% in 1990. This suggests that Korea is now even more dependent on Japanese products, such as parts and machinery, despite its efforts to reduce its trade imbalance and to diversify imports away from Japan. Other ANIEs countries performed better in this sense, since Japan's share in these countries' imports has remained constant over the past 10 years.

The trade intensity index is also calculated in order to investigate the importance of Asia-Pacific countries in Korea's trade. The trade intensity index is defined as follows:

$$\text{Trade intensity index} = \frac{X_{ia}/X_i}{X_{wa}/X_w}$$

where  $X_{ia}$  = trade volume of country i with APEC countries

$X_i$  = total trade volume of country i

$X_{wa}$  = world trade volume with APEC countries

$X_w$  = world total trade volume

In 1980, Korea's trade intensity index with respect to APEC countries recorded 1.90, which means that the share of APEC countries in Korea's trade is almost twice the share of APEC countries in world trade. In 1992, the trade intensity index showed a small decrease to 1.71 due to the sharp increase in trade among APEC countries. As Ro(1993) showed, the figure is relatively low compared with those of ANIEs countries.

### **III. Changing patterns in Korea's trade in services**

#### **1. Trade in services**

There is no consensus on the definition of service industries and trade in services. In this section, however, I define the service industry as 4 areas(6 to 9) in the International Standard Industrial Classification; ISIC), plus construction. Trade in services consists of foreign travel, transportation, insurance, overseas investment income, government transactions, and miscellaneous services. Data on Korea's trade in services can be found in the invisible trade balance account of Korea. Investment income, which is sometimes excluded from trade in services is also included in the trade data as trade in factor services.

During the last two decades, there has been a striking increase in service exports and imports. In 1971, Korea's exports and imports in services were US\$ 410 million and US\$ 173 million, respectively. In 1992, however, these figures rose to US\$ 16,010 million and US\$ 18,625 million, respectively.

With the rapid increase of trade in services, structural change in services trade also occurred. 〈Table 8〉 shows that the share of factor service exports represented by investment income increased from 10.3% to 16.0% during the period 1980-1992. The share of factor service imports, on the other hand, decreased from 39.3% to 19.9% during the same period. Non-factor services consist of shipment, other transportation, travel, and other services including government services. Among them, exports and imports for travel service have increased over 7 times in 12 years, and their shares have increased from 6.9% and 5.2%, respectively in 1971 to 16.8% and 17.2%, respectively in 1989. The export of transportation services also increased rapidly. During the same period, the share of exports in transportation services has doubled. In contrast, the share of government transactions has decreased drastically. Its shares in exports and imports have fallen from 5.5% and 2.2%, respectively, to 4.0% and 1.7%, respectively



〈Table 8〉

Changing patterns of Korea's trade in services

(Unit: US\$ million, %)

	1980		1986		1992	
	volume	share	volume	share	volume	share
Export in Services(A)	5,363	100.0	8,052	100.0	16,010	100.0
Shipment	957	17.8	1,464	18.2	3,091	19.3
Freight	911	17.0	1,414	17.6	3,019	18.9
Insurance	46	0.9	50	0.6	72	0.4
Other transportation	666	12.4	709	8.8	2,010	12.6
Passenger fares	351	6.5	432	5.4	992	6.2
Port services	156	2.9	175	2.2	705	4.4
Charter of carrier	156	2.9	50	0.6	248	1.6
Travel	369	6.9	1,548	19.2	2,690	16.8
Investment income	553	10.3	812	10.1	2,555	16.0
Interest	212	4.0	113	1.4	438	2.7
Other	2,819	52.6	3,519	43.7	5,665	35.4
Government transaction	297	5.5	706	8.8	646	4.0
Miscellaneous services	2,304	43.0	2,670	33.2	4,711	29.4
Non-merchandise insurance	217	4.1	143	1.8	308	1.9
Import in services(B)	6,749	100.0	8,679	100.0	18,625	100.0
Shipment	942	14.0	670	7.7	1,327	7.1
Freight	902	13.4	647	7.5	1,243	6.7
Insurance	40	0.6	23	0.3	84	0.5
Other transportation	1,383	20.5	1,556	17.9	4,798	25.8
Passenger fares	45	0.7	60	0.7	473	2.5
Port services	733	10.9	906	10.4	2,352	12.6
Charter of carrier	439	6.5	329	3.8	956	5.1
Travel	350	5.2	613	7.1	3,213	17.2
Investment income	2,655	39.3	4,020	46.3	3,698	19.9
Interest	1,049	15.5	1,478	17.0	744	4.0
Other	1,422	21.1	1,821	21.0	5,589	30.0
Government transaction	149	2.2	155	1.8	317	1.7
Miscellaneous services	862	12.8	1,375	15.8	4,864	26.1
Non-merchandise insurance	177	2.6	230	2.6	408	2.1
BALANCE	-1,385.9	-	-627.5	-	-2,614.3	-

Source: Bank of Korea, *Statistical yearbook of foreign exchange*, 1993.

in 12 years.

Looking at the structure of Korea's trade in services by country as represented in 〈Table 9〉, one can find that the United States' share is extremely high. The United States' share in Korea's service exports was 37.8% and 47.5% in 1981 and 1989,

〈Table 9〉 Share of countries in the Pacific region in Korea's trade in services

(Unit: %)

Country		1981	1989
U.S.	Export	37.8 (26.6)	47.5 (33.1)
	Import	52.1 (23.2)	48.2 (25.9)
Japan	Export	15.8 (16.5)	32.9 (21.6)
	Import	12.3 (24.4)	18.6 (28.4)
Hong Kong	Export	3.0 (5.4)	3.0 (5.4)
	Import	5.2 (0.8)	5.1 (0.9)
Singapore	Export	1.3 (1.4)	1.3 (2.5)
	Import	5.0 (0.6)	3.1 (1.0)

Note: Figures in ( ) represent the shares in merchandise trade

Source: Lee, Sanghak, 1991.

respectively. The share of the United States in Korea's service imports was 52.1% and 48.2% in 1981 and in 1989, respectively.

As 〈Table 9〉 indicates, Korea's trade in services is highly concentrated in a few countries. A typical measure of the degree of concentration, the Herfindahl index is defined as follows:

$$H = s_1^2 + s_2^2 + \dots + s_i^2 + \dots + s_n^2$$

where  $s_i$  = the share of country i

〈Table 10〉 shows the Herfindahl indices for Korea's trade in goods and services.

〈Table 10〉 Herfindahl index for Korea's trade in goods and services

	1981	1985	1989
Merchandise export	0.1092	0.1583	0.1647
Merchandise import	0.1395	0.1095	0.1543
Service export	0.2249	0.3371	0.3370
Service import	0.3005	0.3260	0.3024

Source: Lee, Sanghak, 1991.

One can easily find that the Herfindahl index for Korea's exports rose significantly in the 80's both in goods and services. The Herfindahl index for merchandise exports increased from 0.1092 in 1981 to 0.1647 in 1989, while that for service exports increased from 0.2249 in 1981 to 0.3370 in 1989. The increase of the Herfindahl index for service trade is, in part, due to the decrease in construction service exports to Saudi Arabia in the 80's. Furthermore, one can also find that trade in services is more concentrated in a few countries. Although it is not shown in 〈Table 6〉, it turns out that this trend of increasing concentration has recently reversed, which means that export country diversification is rather a recent phenomenon.

## 2. Technology trade

In the service trade data represented in the previous section, 'miscellaneous services' consists of construction, branch expenditures, royalties, technology-related services and others. This section deals with the royalties and technology related services in detail, since technology acquisition has become a particular concern for the Korean economy recently.

The trend of technology trade, defined as royalty payments and technology-related service trade, is represented in 〈Table 11〉. Technology exports recorded an increase from US\$ 6 million to US\$ 32.5 million during the 1980-1992 period. However, the balance of payments in technology trade deteriorated during the same period, since technology imports increased more rapidly than did technology exports. Technology imports recorded an increase from US\$ 107.2 million to US\$ 850.6 million, and, thus, the deficit in technology trade increased from US\$ 101.2 million to US\$ 818.1 million during the 1980-1992 period.

Recently, though, Korea's technology imports have been decreasing. After technology imports peaked at US\$ 1,148 million in 1991, it dropped to US\$ 851 million in 1992. In terms of the number of cases of technology imports, the decrease began

〈Table 11〉

Korea's technology imports by country

(Unit: US\$ million, %)

	1980	1986	1990	1991	1992
Receipts(Exports)	6.0	9.2	21.8	35.2	32.5
Payments(Imports)	107.2	411.0	1,087.0	1,183.8	850.6
U.S.	35.5(33.1)	191.6	514.1	622.2	452.5(53.2)
Japan	28.2(26.3)	129.5	341.4	372.5	266.2(31.3)
Germany	2.8(2.6)	19.1	59.3	60.1	27.1(3.2)
France	5.7(5.3)	17.2	29.9	48.9	56.1(6.6)
Others	34.9(32.6)	53.6	142.3	80.1	48.7(5.7)
Balance	-101.2	-401.8	-1,065.2	-1,148.6	-818.1

Note: Figures in ( ) represent the shares

Source: Korea Industrial Technology Association, *Major Indicators of Industrial Technology*, 1993.

even earlier. After the number of cases peaked at 763 in 1989, it has continued to decrease. The number of cases recorded were 738, 582 and 533 in 1990, 1991 and 1992, respectively.

If one looks at the data on Korea's technology imports, one can easily find that Korea is heavily dependent on the U.S. and Japanese technology. In 1992, the shares of the U.S. and Japan in Korea's technology imports are 53.2% and 31.3%, respectively. Furthermore, the United States' share increased during the 1980-1992 period.

〈Table 12〉 represents Korea's technology imports by industry. It shows that Korea's technology imports are concentrated in a few industries. Technology imports in electric and electronic products, machinery, and petroleum refining and chemical products consist of 78.7% of Korea's total technology imports in 1992. Technology imports for electric and electronic products not only comprises a large share in Korea's technology imports in 1992, but also showed a striking increase during the 1980-1992 period. In 1980, its import volume was only US\$ 8.9 million, but in 1992, the import volume reached US\$ 439.9 million.

〈Table 12〉

Korea's technology imports by industry

(Unit: US\$ million, %)

Industry	1980		1986		1992	
	volume	share	volume	share	volume	share
Agriculture	0.8	0.7	0.2	0.0	1.2	0.1
Foods	0.6	0.6	6.1	1.5	8.9	1.0
Pulp/Paper	0.0	0.0	0.1	0.0	2.2	0.3
Textiles	1.6	1.5	6.6	1.6	23.9	2.8
Porcelain/Cement	3.5	3.3	13.0	3.2	24.3	2.9
Petroleum refining/ Chemical products	43.0	40.1	44.9	10.9	104.1	12.2
Pharmaceutical products	0.1	0.1	6.8	1.7	6.7	7.9
Metals	7.8	7.3	9.5	2.3	9.2	1.1
Electric/Electronic products	8.9	8.3	134.2	32.7	439.9	51.7
Machinery	21.2	19.8	89.7	21.8	126.1	14.8
Shipbuilding	2.9	2.7	13.6	3.3	5.0	0.6
Telecommunication services	4.3	4.0	13.8	3.4	10.7	1.3
Electric Power services	1.1	1.0	60.3	14.7	68.2	8.0
Construction services	8.6	8.0	4.0	1.0	7.4	0.9
Others	2.9	2.7	8.2	2.0	12.9	1.5
Total	107.2	100.0	411.0	100.0	850.6	100.0

Source: Korea Industrial Technology Association, *Major Indictors of Industrial technology, 1993*.

## IV. Prospects

With the rapid increase in Korea's trade volume, structural changes for Korea's trade in goods and services occurred. The characteristics of this structural change can be summarized as follows. First, the interdependence between Korea's economy and the other Pacific region countries grew increasingly. The share of Korea's merchandise exports to APEC countries of its total merchandise exports increased from 59.7% in 1980 to 67.1% in 1990. Similarly, the share of Korean merchandise imports from APEC countries increased from 61.7% in 1980 to 74.3% in 1990. Second, the relative importance of labor-intensive export sectors, such as clothing, textiles and footwear, declined in the 80's, while that of capital- and technology-intensive sectors, such as electric appliances, electronic products and transportation equipment, rose in the same

period. Third, trade in travel and transportation services increased rapidly in the 80's, while government transactions grew relatively less important. Fourth, it is increasingly difficult for Korea to import technology. After the volume of technology imports peaked in 1991, it decreased. Finally, Korea's exports in services are more concentrated in a few countries than its exports in goods. The share of the United States in Korea's service exports is almost 50%, and the Herfindahl index for Korea's trade in services turns out to be quite high.

Although Korea achieved rapid growth in exports, both in goods and services during the last two or three decades, it is not expected that such a high growth rate can be maintained in the 90's because of the following reasons.

First, with the end of the Cold War, cooperative relationships among major capitalistic countries were weakened. The results of this were the deterioration of a multilateral international economic order, the strong pursuit of national economic interests and the prevalence of regionalism often closed to outside countries. Under the deteriorating international economic environment, it is difficult to expect a rapid increase in exports.

Second, as 〈Table 13〉 shows, the world output in the 90's, especially output in developed countries, has been recording a below the long-run average growth rate. In 1993, the world average growth rate is expected to be around 2%, and the world trade volume is expected to increase by 3%. In 1994, the outlook is a bit rosy, however. In 1994, the world growth rate is expected to be around 3%, and the percentage increase in world trade volume is expected to be around 5%. But there are many uncertainties in the world economies' recovery: Uncertainties related to the recovery of firms' and consumers' confidence, uncertainties about the protectionism of the major economies and uncertainties about the further reduction of German and other European countries' interest rates.

Third, international competition has grown increasingly fierce. Korea is losing its

〈Table 13〉

World economic outlook(Annual percentage change)

(Unit: %)

	1974-89	1990	1991	1992	1993	1994
World Output	3.5	2.2	0.6	1.7	2.2	3.2
Industrial Countries	2.8	2.3	0.5	1.7	1.1	2.2
U.S.	2.7	1.2	-0.7	2.6	2.7	2.6
Japan	4.2	4.8	4.0	1.3	-0.1	2.0
EC	2.4	3.0	0.8	1.1	-0.2	1.6
World Trade Volume	4.2	4.5	2.4	4.6	3.0	5.0
Industrial country import volume	4.9	4.5	2.5	3.7	1.2	3.4

Source: IMF, World Economic Outlook, October 1993.

competitive advantage in labor-intensive products, and Korea does not have the technology to compete with developed countries. It is increasingly difficult to acquire high technology. The difficulty comes in two forms. One is the protectionistic movement of developed countries to keep their competitive edge in high-tech industries. The other is the deterioration of Korea's investment environment. The number of foreign technology imports has been decreasing in the 90's, and foreign direct investments have shown a drastic decrease in recent years.

The Korean government, under the "New Five-Year Economic Plan," is moving towards internationalization and globalization through reform efforts. It is now trying to eliminate and relax many unnecessary government regulations and restrictions in order to 1) secure Korea's economic growth potential, 2) expand its foreign market and strengthen internationalization, and 3) improve the nation's standard of living. If the reform is implemented successfully, it is expected that Korea's competitive edge in goods and services will improve in the near future.

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