Economic Growth in Korea (1911-1999): A Long-Term Trend and Perspective

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This paper provides a consistent and synthetic time-series data for the Korean economy during the twentieth century. The data being covered are value-added, employment, and capital stocks by industries during the period of 1911-99. The main sources of data are Mizoguchi and Umemura (1988) for the colonial period (1911-38) and Pyo (1998) and Pyo and Kwon (1999) for post-war period (1953-99). The data for the interim period (1939-52) are either compiled from alternative sources of data or imputed by econometric method of estimating missing observations. In order to link pre-war data with post-war data of the Republic of Korea, the pre-war data are divided between South and North Korea. The examination of long-run data provides the evidence that the continuous capital accumulation and the increase in labor productivity through industrial structural adjustment were the main sources of its late industrialization. We find the growth of the Korea economy during the twentieth century has been basically of input-driven nature with very little contribution of total factor productivity reaffirming Krugman (1994) and Pyo and Kwon (1999). But the relative contribution of total factor productivity in Mining and Manufacturing sector has not been insignificant implying that the input-driven growth was made possible through both inter-industry and intra-industry capital transformation in mainly Manufacturing sector.

Keywords: Long-term growth, Capital accumulation, Total factor productivity

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I. Introduction

The late industrialization of the Korean economy during the twentieth century was a truly remarkable one by any standard. Korea had remained as a hermit kingdom of Lee Dynasty until 1910 when it was annexed to Japan. It was the last country in East Asia to open its port to the West.

Lucas (1993) has suggested that we need a theory that incorporates the possibility of rapid growth episode like Korea. He further notes in Lucas (1996) that the economy of South Korea has grown from one of the very poorest in the world to a middle income society with a living standard about one third of America's and at current rates of growth, it will not be long before Korea is one of the wealthiest economies. Then, he pauses to question how we should interpret this remarkable economic success referred to as a *miracle*.

The examination of long-run data through the present paper reveals that Korean growth was truly an accelerated one as any late industrialization should be. But it was not a smooth and sustained growth. The pre-war industrial development was disrupted by the preparation of war and by the engagement in war during 1938-45. After the independence in August 1945, the Korean peninsula became divided and the Korean War followed in 1950-3. Even after launching the first Five-year Economic Development Plan in 1962, there were two major oil crises in 1974 and 1980. Lastly the financial crisis of December 1997 was seemingly putting the economy into the brink by recording −5.8 percent growth of real GDP in 1998 and reducing per-capita gross national income from 11,380 dollars in 1996 to 6,823 dollars in 1998. But the Korean economy has made a V-shaped recovery approaching to 9 percent growth of real GDP in 1999.

Neither was it a post-war *miracle* without any pre-war linkage in the sense that there was a significant indigenous capitalist development under the Japanese colonial rule even if it was often in repressed and distorted form typical to any colonial capitalism. The growth accounting by industry shows that among other things, there was a significant development in manufacturing and social infrastructure including electricity, railroad, and education *etc*. Most importantly, the establishment of government and social institutions

and related rules and laws must have been crucial to creating the nation's will to economize.

The purpose of this paper is to construct a synthetic time-series data base of the Korean economy during the period of 1911-99 in order to analyze its long-run growth episode. For the period of 1911-38, I use the estimates of Mizoguchi and Umemura (1988) and my alternative estimates of capital stocks in Pyo (1996). For the subsequent period of 1939-52 which I referred to as "Dark Period of Statistics," I use an econometric method of missing data and estimate basic value added and factor inputs data. Then the data of 1911-45 are divided between South Korea and North Korea in order to be linked to the post-war South Korean data (1945-99). Finally old National Income Accounts data (1953-70) by the Bank of Korea are linked with new National Accounts data (1970-99) for GDP series by industry. For capital stock data, I use my earlier estimates in Pyo (1998).

The major findings of the present paper are two-folded. The first finding is that the post-war poverty was the consequence of war and political disruption following the independence of Korea from the Japanese rule. The second finding is that the nature of Korean growth was input-driven rather than productivity-driven confirming the proposition advanced by Krugman (1994) and the earlier result of Pyo and Kwon (1999). But the relative contribution of total factor productivity in Mining and Manufacturing has not been insignificant implying that the input-driven growth was made possible through both inter-industry and intra-industry capital formation in mainly Manufacturing sector. Therefore, one of the most important lessons that can be learned from the Korean growth experience by other developing countries seems the fact that the creation of national will to economize and the establishment of social institutions to mobilize domestic savings are crucial ingredients for successful industrialization.

This paper is organized as follows. In section II, we examine several statistics in National Statistical Office (1995a) for the pre-colonial period. Section III discusses how we have estimated missing data during the colonial period (1911-45) and presents estimates of Net National Product (NNP), employment, and capital stock and the result of growth accounting. In section IV, we discuss how we have linked old national income accounts with new national accounts and present the result of growth accounting

during the period of 1946-99. Section V concludes the paper.

II. The Pre-Colonial Period (1876-1910)

The hermit kingdom of Lee Dynasty opened its port of Pusan to Japan officially for the first time in 1876. Since then, the Korean peninsula became subject to hegemony power struggle among Japan, Russia, and China (Ching Dynasty) until 1910 when it was formally annexed to Imperial Japan. The period between 1876 and 1910 is frequently referred to as "The Modernization Period" by Korean historians because it was the period when a series of policy reforms to transform Korea from a feudal society to a modern one were introduced. The period was characterized by series of political disruptions between the conservatives backed by China and the reformists backed by Japan. Therefore, the period was a very chaotic period in modern Korean history.

In terms of modern statistics at the government level, it was during the so-called *Kap-O* Restoration (June 1894-5) when the First Kim Cabinet established Office of Record on July 30, 1894, which began to compile official statistics. As a consequence of its short history, there are few reliable data for the period except some population data, production data, and foreign trade data. However, National Statistical Office (1994) compiled some basic statistics from various sources for this period. In what follows, I review some of the most essential economic statistics covering this period to get a feel of the pre-colonial state of the Korean economy.

A. Population and Households

According to Chosun Dynasty Registry (*Ijo Silrok*), the population of Chosun in 1801 (the first year of King Soonjo) was 7.5 million with 1,758 thousand households. But *Ilsungrok* reports the size of population and number of households in 1875 (the first year of King Kojong) as 6.7 million and 1,635 thousand respectively. The estimates of population were based on household survey, which had been conducted in every three years since 1625. In 1896, Household Survey Rules was established and replaced by Civil Registry Law in 1909. By the nature of household survey conducted in turbulent period, the estimates seem largely underestimated

TABLE 1

POPULATION DURING THE PRE-COLONIAL PERIOD

Year	Household	Population	Male	Female
1801	1,757,973	7,513,792		
1875	1,634,908	6,698,418	3,377,704	3,320,714
1880	1,573,029	6,581,227	3,313,761	3,267,466
1885	1,564,997	6,626,734	3,334,303	3,292,431
1890	1,562,770	6,519,450	3,295,242	3,224,208
1897	1,332,501	5,198,248	2,967,687	2,328,481
1900	1,397,630	5,608,151		
1906	2,765,878	13,023,029		
1909	2,787,891	13,090,856		
1910	2,804,103	13,313,017	7,057,458	6,255,559

Source: National Statistical Office (1994)

because those without the registry including peddlers, servants, women, infants and olds must have been omitted.

The later statistics such as Chosun Statistical Yearbook (1910) by the Colonial Government of Chosun reported the estimate of population as 13.3 million and the number of households as 2,895 thousand units. The population of Seoul in 1910 was only 278,958 (2.1%), which compares with 10,612,577 (24%) in 1990 out of 43.4 million in South Korea.

B. Production

Agricultural production in 1909 is summarized in Table 2. Rice production was 7,458 thousand suk (1 suk=100kg), which was about 25 percent of the 1993 production (32,941 thousand suk). The total number of mining sites in 1909 was reported as 734 sites. The number of metal mining sites was 553 including 193 gold mines and the number of non-metal mines was 181 including 40 coal mines.

The manufacturing production in 1909 is also reported in Table 3 with the total amount of 3.5 million won. The major manufacturing was the grinding of rice crops (62.3%) followed by Metals and Machinery (19%), Non-ferrous metals (7.3%), Paper and Printing (6.3%), and Textile (7.1%). There were 75 rice-grinding mills in 1911 of which 16 mills were managed by Korean and 59 mills were managed by Japanese.

But according to Chosun Statistical Yearbook (1910), the total

TABLE 2

AGRICULTURAL PRODUCTION AND MINING SITES

Agricultural Production		(Unit: Suk)
	1909	1910
Rice	7,458	8,148
Barley	3,840	3,548
Beans	1,533	1,871
Red Bean	613	657
Millet	2,709	2,948
Corn	315	348

	Mining Sites	(Unit: Number of Sites)
		1909
Metal	Total	553
	Gold	193
	Iron	57
	Gold Dust	176
	Gold & Silver	44
	Others	83
Non-Metal	Total	181
	Coal	40
	Black Lead	141
	Limestone	0
	Others	0

Source: National Statistical Office (1994)

TABLE 3

MANUFACTURING PRODUCTION (1909)

Manufacturing Industry	Sites	Workers			Total Amount (Unit: 1,000Won)	Share (%)
		Total	Korean	Japanese		
Grinding of Rice Crops	34	1,225	773	452	2,198	(62.3)
Metals and Machinery	19	292	104	188	376	(10.7)
Non-Ferrous Metals	16	576	363	213	256	(7.3)
Paper and Printing	6	461	403	58	221	(6.3)
Textile	4	201	163	38	249	(7.1)
Chemistry	2	27	14	13	53	(1.5)
Others	7	639	304	335	177	(5.0)
Total	88	3,421	2,124	1,297	3,530	(100)

Source: National Statistical Office (1994)

amount of manufacturing production in 1910 was 9.2 million won with 151 factories and 274 engineers and 8,203 production workers of which 6,637 were Korean and 1,468 were Japanese and 98 were other foreign nationals. Therefore, 1909 manufacturing statistic seems to have been underestimated.

C. The Service Sector

There are various indicators for the state of service sector around 1910. Most of market transactions in late Lee Dynasty were made at 5-day Markets, which opened six times each month. According to Chosun Statistical Yearbook (1911), the total number of such markets increased from 849 places in 1908 to 1,084 places in 1911. The total number of market openings was 77,184 times and the total amount of market transaction was 56.2 million won with agricultural sales of 14.8 million won followed by cattle sales (13.8 million won) and fish sales (5.2 million won).

The distribution of employment by occupation compiled from Chosun Statistical Yearbook (1910) indicates that most of workers in the service sector worked as unskilled labor. Out of 140,136 persons surveyed in 1910, 40,561 persons (28.9%) worked at restaurants, 37,286 persons (26.6%) as service labor, 16,625 persons (11.9%) worked at inns and hotels and 4,305 persons (3.1%) as sailor.

Other indicators of the service sector include the supply of running water and railroad system as shown in Table 6. By the end of 1910, a total of 16,327 households were beneficiaries of water-supply and 11,617 (71.2%) units were located in Seoul area, which held the highest ratio of water supply, 18 percent out of 64,581 households. The total mileage of railroad being constructed by 1910 was 674.6 miles with 2 million passengers (5,703 passengers per day) and 0.9 million tons (2,503 tons per day) of cargo shipping.

During this period postal service and telephone were also provided. Total number of post offices increased from 18 places in 1902 to 503 places in 1910. Total number of receipts in post offices almost doubled from 24.6 million in 1906 to 48.1 million in 1910. The number of telephone subscribers increased from 310 persons in 1902 to 6,448 persons in 1910 while that of telephone calls increased from 0.53 million calls to 21.1 million calls.

TABLE 4

MARKET STATISTICS (1911)

Total number of Markets	1,084	
Market Openings	77,184	
The Amount of Market Transaction		
Unit	Thousand won	Share (%)
Agricultural Sales	14,817	26.4
Cattle Sales	13,732	24.5
Fish Sales	5,160	9.2
Cloth Sales	12,202	21.7
Others	10,251	18.2
Total	56,182	100

Source: National Statistical Office (1994)

TABLE 5

DISTRIBUTION OF EMPLOYMENT IN SERVICE SECTOR (1910)

Ranking	Service Sector	Workers	Share (%)
1	Restaurants	40,561	28.9
2	Service Labor	37,286	26.6
3	Inns and Hotels	16,625	11.9
4	Sailor	4,305	3.1
5	Meat Sale	3,665	2.6
Total		140,136	100

Source: National Statistical Office (1994)

According to Yearbook (1911), there were a total of 16,540 traditional schools with 16,771 teachers called *Seodang* by 1910 (see Table 7). The total number of students is reported to be 141,604 persons so that about nine students per *Seodang* were enrolled. But the proportion of male student was 99.6 percent. The number of *Seodang* reached its peak with 25,482 in 1920 but declined rapidly to 2,679 by 1943 as a result of elementary school system replaced by the Colonial Government. In 1910, there were 173 such elementary schools with 749 teachers and 20,194 students. The proportion of male student was still dominant with 93.7 percent.

TABLE 6

OTHER INDICATORS OF THE SERVICE SECTOR

The Supply of Running Water					
	Seoul	Inchon	Pusan	Pyongyang	Total
Household	11,617	1,005	3,314	391	16,327
Share (%)	71.2	6.2	20.3	2.4	100

Railroad System						
	1907 (A)	1908	1909	1910	1993 (B)	B/A
Mileage (mile)	641.5	641.8	640.5	674.6	1,925	3
Passengers per Day	7,193	5,953	5,289	5,703	1,981,251	275.4
Carge per Day (ton)	1,072	2,021	1,951	2,503	164,703	153.7

Postal Service					
	1902	1904	1906	1908	1910
Post Offices	18	67	526	483	503

	1906 (A)	1908	1910	1993 (B)	B/A
Total Receipts	24,585	35,660	48,137	2,988,619	121.6
Receipts per Capita (year)	1.9	2.7	3.6	67.8	35.7
Receipts per Capita (day)	67.4	97.7	131.9	8,188	121.6

Telephone				
	1902	1905	1906	1910
Telephone Calls	525,552	4,737,368	8,469,808	21,140,804
Subscribers	310	1,065	2,361	6,448
Calls per Subscriber	1,695	4,448	3,587	3,279

Source: National Statistical Office (1994)

The modern banking and insurance system was also established during this period. In 1907, there were three Korean commercial banks and one Japanese commercial bank as shown in Table 8. There were also six Agriculture and Industrial Banks which were established to help the imperialists control private capital in Chosun. In 1908 the Bank of Chosun was established with 12 regional branch offices.

There were 11 life insurance companies, 14 fire insurance companies, and 3 marine insurance companies as of 1911 according to Yearbook (1911). The number of life insurance contracts was 6,005 contracts with 4.5 million won. There were

TABLE 7

EDUCATION STATISTICS

Seodang		Students			Teacher
	Number	Male (%)	Female (%)	Total	
1910	16,540	141,034(99.6)	570(0.4)	141,604	16,771
Elenmentary School		Students			Teacher
	Number	Male (%)	Female (%)	Total	
1910 (A)	173	18,920(93.7)	1,274(6.3)	20,194	749
1993 (B)	6,057	2,244,616(51.7)	2,091,636(48.3)	4,336,252	139,159
B/A	35.0	118.6	1,641.80	214.7	185.8

Source: National Statistical Office (1994)

TABLE 8

BANKING AND INSURANCE (1907-10)

	1907	1908	1909	1910
The Bank of Chosun				
Headquarter	-	1	1	1
Branch Office	-	12	12	12
Korean Commercial Banks				
Headquarter	3	3	3	3
Branch Office	5	4	4	4
Japanese Commercial Banks				
Headquarter	1	1	1	1
Branch Office	28	16	16	16
Agriculture & Industrial Banks				
Headquarter	6	6	6	6
Branch Office	17	22	26	27

Insurance (Unit: 1,000Won)

Year: 1911	Number	Contracts	Amount	Premium & Misc.
Life Insurance Companies	11	6,005	4,527.1	240.3
Fire Insurance Companies	14	16,654	23,307.5	151.9
Marine Insurance Companies	3	6,891	19,123.3	25.1
Total	28	29,550	46,963.9	417.3

Source: National Statistical Office (1994)

TABLE 9

MONEY SUPPLY AND GOVERNMENT EXPENDITURE (1902-10)

(Unit: 1,000Won)

	1902	1904	1906	1908	1910
Money Supply (A)	626	3,372	9,224	10,385	20,164
Growth Rate (%)	-	287.6	13.5	18.7	50.0
Government Expenditure (B)	7,586	14,215	7,967	23,353	23,765
Deposit (C)	4,419	9,190	14,386	12,008	16,889
Loan (D)	3,860	5,090	11,808	16,497	22,991
A/B (%)	8.3	23.7	115.8	44.5	84.8
D/C (%)	87.3	55.4	82.1	137.4	136.1
D/B (%)	50.9	35.8	148.2	70.6	96.7
	1903	1904	1906	1908	1909
Interest on Time Deposits (E)	5.9	5.8	5.7	5.8	5.8
Interest on Loans (F)	15.4	14.9	13.4	13.2	12.2
F−E	9.5	9.1	7.7	7.4	6.4

Source: National Statistical Office (1994)

16,654 fire insurance contracts with the contract amount of 23.3 million won and 6,891 marine insurance contracts with 19.1 million won.

According to Yearbook (1906-10), the total bank deposit increased from 4.4 million won in 1902 to 16.9 million won in 1910, while the total loan by banks increased at faster rate from 3.9 million won to 23 million won during the same period ultimately surpassing the deposit amount and reaching the same level of the government expenditure (23.8 million won). The interest rate on time deposits ranged 5.4-6.1 percent, while the interest on loans ranged 11.3-13.1 percent in 1909.

During the period, the money supply increased drastically at an average annual rate of 54.3 percent from 626,000 won in 1902 to 20,164,000 won in 1910. Accordingly the ratio of money supply to the government expenditure increased from 8.3 percent to 84.8 percent.

D. Government Budget

According to Korea Chronology(*hankookji*) (1900), the fiscal balance system in modern context was first introduced in 1896 with five categories of taxes: (1) land tax (2) house tax (3) customs

tax (4) gold mining tax and (5) commodity tax (Ginseng tax and miscellaneous tax). For example, in 1900 the total tax revenue was 5.8 million won of which land tax (2.98 million won) and customs tax (0.8 million won) occupied the largest shares (see Table 10). In particular, the relative importance of the customs tax increased over time as the amount of external trade increased after the official opening of ports (see Table 11). The customs tax was composed of import tax, export tax, and port entry tax. The total amount of customs tax increased from 354,117 won in 1893 to 1.1 million won in 1897 while total amount of export and import increased from 5.6 million won to 19.0 million won.

The government expenditure was composed of current account and temporary account (see Table 12). The temporary account usually occupied 10-20 percent of total government expenditure. The total amount of the government expenditure budget increased from 5.5 million won in 1896 to 5.9 million won in 1900 while that of the government revenue increased from 4.8 million won to 6.2 million won. Therefore, it looks as if there was a fiscal surplus of 0.3 million won in 1900. However, the total expenditure did not include preparatory budget so that it did not reflect the true budget situation. Since there was a request for the Japanese loan of 3 million won, the fiscal balance must have been in deficit. The composition of expenditure budget by category in 1900 indicates Military Expense (24.8%), Interior Affairs including police and local administration (23.6%), and Palace Expenses (11.5%) were major expense items.

E. Foreign Trade

After the official port-opening of 1876, the volume of foreign trade in late Lee Dynasty increased substantially throughout the pre-colonial period. Both exports and imports increased at an annual average rate of 17.1 percent as total amount of exports and imports increased from 281,000 won in 1876 to 59.7 million won in 1910. But throughout the entire period trade balance was always in deficit: 21.5 million won in 1906 and 19.9 million won in 1910. The export volume fluctuated a lot depending on crop harvest. For example, in 1890-1 rice export increased by 30 times of the rice export in 1879 due to a good harvest but in 1892-3 export amount declined by 27-31 percent.

TABLE 10

DECOMPOSITION OF TAX REVENUE (1896-1900)

(Unit: Won)

	1896	1897	1898	1899	1900
Land Tax	1,477,681	1,715,000	2,227,758	2,773,642	2,981,318
House Tax	351,338	396,000	587,558	1,079,580	1,268,478
Custom Tax	429,882	495,000	750,000	800,000	800,000
Gold Mining Tax	10,000	40,000	40,000	5,000	10,000
Commodity Tax	906,583	398,000	414,000	800,000	770,000
Total	3,175,484	3,044,000	4,019,316	5,458,222	5,829,796

Source : National Statistical Office (1994)

TABLE 11

CUSTOMS TAX REVENUE (1893-7) (Unit: 1,000Won)

	1893	1894	1895	1896	1897
Export Tax	85,720	115,779	124,261	226,342	420,292
Amount	1,698,116	2,311,215	2,481,808	4,728,700	8,973,895
(%)	(5.1)	(5.0)	(5.0)	(4.8)	(4.7)
Import Tax	262,679	357,828	601,588	448,137	673,188
Amount	3,880,155	5,831,563	8,088,213	6,531,324	10,067,514
(%)	(6.8)	(6.2)	(7.5)	(6.9)	(6.7)
Customs Tax	354,117	481,006	741,297	691,784	1,113,169
Amount	5,578,271	8,142,778	10,570,021	11,260,024	19,041,409
(%)	(6.3)	(5.9)	(7.1)	(6.1)	(5.8)

Source: National Statistical Office (1994)

TABLE 12

GOVERNMENT EXPENDITURE (Unit: Won)

	1896	1897	1898	1899	1900
Revenue (A)	4,809,410	4,191,192	4,527,476	6,473,222	6,162,796
Expenditure (B)	5,517,076	4,190,470	4,525,528	6,424,932	5,891,871
Palace Expenses	570,000	650,000	630,000	650,000	677,160
Exterior Affairs	71,932	79,198	132,876	176,223	236,602
Interior Affairs	1,465,930	1,310,466	1,260,055	1,299,092	1,391,101
Military Expense	1,029,101	979,597	1,251,745	1,438,337	1,463,207
Others	3,136,963	3,019,261	3,274,676	3,563,652	3,768,070
A−B	-707,666	722	1,948	48,290	270,925

Source: National Statistical Office (1994)

TABLE 13

FOREIGN TRADE AND TRADE BALANCE (1876-1910)

(Unit: 1,000Won)

	Export	Import	Trade Balance
1876	93	188	-95
1886	566	2,536	-1,970
1890	3,876	4,753	-877
1891	3,395	5,285	-1,890
1892	2,486	4,622	-2,154
1893	1,698	3,880	-2,182
1896	4,729	6,531	-1,802
1897	8,974	10,667	-1,093
1906	8,133	29,654	-21,521
1910	19,914	39,783	-19,869
Annual Average Growth Rate (%)	17.1	17.1	

Source: National Statistical Office (1994)

As shown in Table 14, the decomposition of exports by commodity during 1908-10 indicates rice (36%) and corn (24%) were major export items, while the decomposition of imports by commodity indicates textile including raw cotton (10.5%) and cotton yarn (4.3%) was the biggest import item followed by cigarettes (2.3%) and sugar (1.9%).

The direction of trade statistics in Table 15 from Statistical Yearbook (1906, 1910) reveals that the share of export destination follows the order of Japan (74.4%), China (19.7%), and Russia (4.8%). In terms of imports, the share of import from Japan (59.6%) is followed by those of China (12.2%) and United States (6.5%).

F. Wages and Prices

During 1906-10, the average wage of Korean workers was about half of the average wage of Japanese workers. In most occupations, the wage differentials were becoming larger in later years. For government employees, Japanese bureaucrats received about 2-3 time higher wages than their Korean counterparts.

TABLE 14

EXPORT AND IMPORT BY COMMODITY (1908-10)

(Unit: 1,000Won)

Export			Import		
Item	Amount	%	Item	Amount	%
Rice	6,098	36.4	Raw Cotton	4,130	10.5
Beans	4,034	24.1	Cotton Yarn	1,703	4.3
Cattle Leather	780	4.7	Dried Raw Cotton	1,581	4.0
Cattle	592	3.5	Timber	1,239	3.2
Ginseng	345	2.1	Petroleum	1,212	3.1
Iron Ore	251	1.5	Cigarettes	900	2.3
Manure	235	1.4	Coal	1,016	2.6
Gold	212	1.3	Sugar	756	1.9
Others	4,212	25.0	Others	25,615	69.1
Total	16,759	100	Total	38,152	100

Source: National Statistical Office (1994)

TABLE 15

EXPORT AND IMPORT BY COUNTRY (1897-1909)

(Unit: 1,000Won)

		1897	%	1901	%	1905	%	1909	%
Japan	Export	8,090	90.1	7,402	87.5	5,390	78.1	12,082	74.4
	Import	6,432	63.9	9,052	61.6	23,562	73.7	21,852	59.6
China	Export	736	8.2	800	9.4	1,502	21.7	3,203	19.7
	Import	3,536	35.1	5,618	38.2	5,945	18.6	4,473	12.2
Russia	Export	148	1.7	260	3.1	12	0.2	785	4.8
	Import	100	1.0	27	0.2	102	0.3	79	0.2
England	Export	-	-	-	-	0.0	0.0	50	0.3
	Import	-	-	-	-	364	1.2	6,478	17.7
USA	Export	-	-	-	-	-	-	69	0.4
	Import	-	-	-	-	1,979	6.2	2,397	6.5
Belgium	Export	-	-	-	-	-	-	0.3	0.0
	Import	-	-	-	-	8	0.0	146	0.4
Germany	Export	-	-	-	-	-	-	37	0.2
	Import	-	-	-	-	-	-	513	1.4
Total	Export	8,974	100	8,462	100	6,904	100	16,249	100
	Import	10,068	100	14,696	100	31,960	100	36,649	100

Source: National Statistical Office (1994)

TABLE 16

WAGE DIFFERENTIAL BETWEEN KOREAN AND JAPANESE WORKERS (1910)

	Korean	Japanese
Carpenter	1.0	1.5
Smith	0.85	1.45
Shoe-Repairer	1.0	1.35
Workers at Rice Mill	0.6	0.75
Daily Farmer (Male)	0.45	0.8
Daily Farmer (Female)	0.3	0.45
Stone Mason	1.0	1.9
Wok in Gold & Silver	1.2	1.8
Barber	0.7	1.0

Source: National Statistical Office (1994)

The wage differential in terms of compensation per day between Korean workers and Japanese workers in 1910 was reported in the Yearbook as widely varying: for example, carpenter (1.0 won *vs.* 1.5 won), smith (0.85 won *vs.* 1.45 won), shoe-repairer (1.0 won *vs.* 1.35 won), workers at rice mill (0.6 won *vs.* 0.75 won), and daily farmer (for men, 0.45 won *vs.* 0.8 won and for women, 0.3 won *vs.* 0.45 won).

Table 17 is the price list of major consumer goods in Seoul area. When we combine it with wage table, we can impute wages in kind. For example, the daily allowance of a carpenter in 1908-10 was equivalent to 1.12 *mal* (180 litre) of rice, 55 eggs, or 2.5 *keun* (1.5 kg) of beef.

In 1894, New Monetary Regulation was adopted to establish exchange rate between Korean money and Japanese won. One Japanese won (1 won=100 Jun) was exchanged with five Korean *Ryangs* (1 *Ryang*=10 *Jun*). Therefore, one Korean *Jun* was equivalent to two Japanese *Jun*. At that time Mexican dollar was frequently quoted in customs statistics as international means of transaction. Since one Mexican dollar was equivalent to 24.44g of pure silver, it was exchanged with 1.007 Japanese won.

G. Summary and Conclusion

We have identified very limited data to analyze the period between the official port-opening in 1876 and the end of Lee

TABLE 17

PRICE LIST OF MAJOR CONSUMER GOODS (SEOUL AREA, 1908-10)

(Unit: Won)

Item	Unit	1908	1909	1910	Average (1908-10)
Rice	*suk*	1.623	1.487	12.730	14.61
Beans	*suk*	0.610	5.520	7.315	6.312
Red Bean	*suk*	0.720	-	7.703	7.452
Barley	*suk*	0.420	3.530	3.875	3.868
Wheat	*suk*	0.780	6.780	7.050	7.210
Radishes	*10kwan*	1.350	2.000	-	1.675
Salt	*keun*	0.070	-	1.200	0.635
Soy Sediment	*100keun*	5.950	4.800	4.250	5.000
Soy Sauce	*mal*	3.750	3.500	2.450	3.233
Sugar	*100keun*	8.830	8.600	8.600	8.677
Eggs		1.500	1.490	1.463	1.484
Beef	*keun*	0.380	0.250	0.350	0.327

Source: National Statistical Office (1994)

Dynasty in 1910. However, a survey of various statistics supports the view that there was a significant social and economic transformation toward modernization and industrialization during the period.

In other words, there was some indigenous modernization effort in late Lee Dynasty even though it was ultimately succumbed to Imperial Japan as the latter consolidated power in East Asia through winning successive wars with China in 1894 and Russia in 1904.

III. Economic Growth during the Colonial Period (1911-45)

After the formal annexation of the Korean peninsula by Imperial Japan in 1910, the Japan's colonial rule started. In terms of the structural change in Korean economy, Lee (1971) divides the period under the Japanese colonial rule as (1) Basic Infrastructure Development Period (1910-20), (2) Monopolization Period (1921-35), and (3) War Economic System (1936-45). In terms of data availability, the colonial period is divided by two sub-periods. One is the period of 1911-38 when a reasonably consistent set of data is available from Chosun Statistical Yearbook (1908-42) and studies

by Mizoguchi and Umemura (1988), Suh (1978), Ban (1974) and Lee (1971). The other is the period between 1939 and 1945 when Japan started mobilizing resources for preparing war and actually engaging in war.

A. The Period of 1911-38

Mizoguchi and Umemura (1988) provides estimates of national accounts in both current and 1934-6 average prices for the period of 1911-38. They also report trade matrix among Japan, Korea, Taiwan and Japan's other colonial territories, population, employment and wages, and production statistics of agriculture, forestry, and fishery, manufacturing, personal consumption expenditure, capital formation and stocks, government expenditure, and trade and balance of payments statistics.

In Pyo (1996), I presented alternative estimates of capital stocks for the period of 1911-40 arguing that the estimates of Mizoguchi and Umemura (1988) might have overestimated the value of capital stocks because they included imputed wages paid to construction workers in their estimates of construction investment and therefore, it could have led to double-counting in GNP accounts. My estimates of capital formation and capital stocks were significantly smaller than their estimates (see Table 20, and Table A-9 in Appendix) especially in later period because the perpetual inventory model was applied to the investment data generated by commodity flow method from production statistics of investment goods. As a consequence, the average growth rate of capital stock estimates by Mizoguchi and Umemura is 5.7 percent during 1911-38 while that of my estimates is 2.9 percent.

In order to account for sources of growth, it is necessary to estimate shares of factor income. However, the estimates of labor income and capital income are not available for this period when national income accounting was not established. We may only conjecture that the share of capital income must have been quite low because our estimates of capital stock do not include land and the economy was still agriculturally-based one with rice being most important production and export item.

B. The Period of 1939-45

The last seven years of the colonial period was when Japan

began preparing for war mobilizing all the resources in the Korean peninsula and engaged itself in the World War II. Naturally the seven-year period is characterized by lack of data. Even some of the basic economic data were subject to the government control of information and were not released adequately. Massive conscription and mobilization of social infrastructure and factories for the preparation of war had to be concealed. Therefore, all of the estimates of national accounts, production, employment and capital stocks by Mizoguchi and Umemura (1988) stop in 1938 leaving the period 1939-45 blank.

Mizoguchi (1996, p.7) also notes that the period of 1940-55 is the period of social and economic disruption in Korea through World War II, its independence from Japan, and Korean War (1950-3). He argues that the period is characterized by rapid changes in relative prices among commodities due to hyper-inflation and the industrial structural change due to the independence and the subsequent division of the Korean peninsula between North Korea (DPRK) and South Korea (ROK).

Mason *et al.* (1981, p.117) argued that the living standard of Koreans in 1953 when the truce agreement was signed must have been a lot lower than that in early 1940's. They noted that even though a direct comparison between the two periods seems impossible due to lack of reliable data, the data on net commodity production in all sectors indicates that production activity declined significantly between the two periods.

In what follows, we describe how we generated imputed estimates of employment, GDP, and capital stocks for this turbulent period using interpolation of population data and converting production data in quantity to GDP by the regression method for missing observations (See, for example, Kelejian (1969) and Greene (1999, pp. 259-63)).

a) Estimates of Employment

For the period of 1939-43, population and employment data are available from Chosun Statistical Yearbook and National Statistical Office (1995a). For the period of 1944-5, only population data are available from the Bank of Korea (1955). According to National Statistical Office (1995a), the population in 1943 is reported as 25,827,308 persons, which is decomposed by 10,917,880 persons of employed (42.3%), 14,135,863 persons of unemployed (54.7%), and

773,565 persons of unreported (3.0%). In absence of other reliable information, we applied the 1943 employment ratio (42.3%) to 1944-5 population data to estimate the number of employed in 1944-5.

The decomposition of 1943 employment data by occupation is reported as Agriculture and Dairy (8,148,793 persons, 74.5%), Fishery (205,521 persons, 1.9%), Mining and Manufacturing (705,086 persons, 6.5%), Commerce and Transport (628,213 persons, 5.8%), Public Service and Individual Business (338,329 persons, 3.1%), and Others (891,938 persons, 8.2%). Therefore, we applied the employment weight of the primary industry (76.4%), the secondary industry (6.5%), and the service industry (17.1%) to the employment estimates of 1944-5 to impute employment by industry for the period of 1944-5.

b) Estimates of NNP by Sector

The period of 1939-45 can be divided into two sub-periods in terms of data availability. In the first sub-period of 1939-42, there is some production data in quantity units in the primary sector and some profit data in several service industries. Therefore, we estimated two regression equations for the period of 1929-38 as follows:

The primary sector:

$NNP_1 = \alpha + \beta_1 TAP + \beta_2 Forestry + \beta_3 Fishery + \gamma T + u$

Variable	Coefficient	Std. Error
Constant	-473,572.1	317,916.5
TAP	0.001174	0.000863
Forestry	0.001945	0.007623
Fishery	0.000503	0.009839
T	-9,420.095	61,698.14
Adjusted R^2: 0.79	D.W.statistic: 1.58	

where NNP_1 is NNP of primary sector, TAP denotes total agricultural production, Forestry denotes total forestry production, and Fishery denotes the total amount of fish catch.

The service sector:

$NNP_3 = \alpha + \beta_1 Railroad + \beta_2 Bank + \beta_3 Insurance + \gamma T + u$

Variable	Coefficient	Std. Error
Constant	-468,532.7	136,636.2
Railroad	4.030290	2.605695
Bank	84.04342	26.60068
Insurance	-0.159201	10.46998
T	14,855.45	12,960.58
Adjusted R^2: 0.98	D.W.statistic: 2.58	

where NNP_3 is NNP of service sector, Railroad denotes the profits of state-owned railroads, Bank denotes the profits of banking institutions, and Insurance is the profits of insurance institutions.

Then, we generated NNP in 1934-6 prices of the primary sector for the period of 1939-42 by substituting production data in quantity units in the primary sector. We also generated real NNP of the service sector by substituting profit data in the service sector of 1939-42 to explanatory variables. The resulting estimates of real NNP of the primary sector and the service sector are reported in Table 20.

For the secondary sector, even quantity data are not readily available for 1939-45. However, National Statistical Office (1995a) quotes from Chosun Statistical Yearbook and Chosun Economic Statistical Review mineral production in quantity units for the sub-period and manufacturing production in amount by 10 sub-sectors in selected years: 1939, 1940, 1942, and 1943. Since the production data for 10 sub-sectors of manufacturing came from factories with more than five employees, it must have under-estimated the actual production amount. But since Mizoguchi and Umemura (1988) reports manufacturing production which is smaller than estimates by Suh (1978), we selected the overlapping year of 1936 and adjusted the data from more than five employees using the ratio of 1936 Mizoguchi and Umemura's estimate to 1936 estimate of Chosun Economic Statistical Review.

In order to generate NNP for the secondary sector, we have taken following steps:

1) Mining production in real prices for the period of 1914-36 is available from Mizoguchi and Umemura (1988, Table 41). We

use it as dependent variable in the following regression equation where explanatory variables are quantity units of major mineral production:

The regression equation is as follows:

$$Mining = \alpha + \beta_1 Silver + \beta_2 Copper + \beta_3 Moly + \beta_4 Iron + \beta_5 Coal + \gamma T + u$$

Variable	Coefficient	Std. Error
Constant	-9,372.916	6,064.447
Silver	-0.069890	0.552636
Copper	5.588502	4.737201
Moly	-2.693008	2.435462
Iron	-0.000606	0.016312
Coal	0.029984	0.015919
T	-1,379.250	1,101.577
Adjusted R^2: 0.96	D.W.statistic: 3.29	

where Mining denotes the real NNP of Mining sector, Silver denotes the silver production amount, Copper denotes copper production amount, Moly denotes the molybdenite production amount, Iron denotes the iron production amount, coal denotes the coal production amount, and T denotes the time trend.

The series is extended to generate Mining production in real prices for the period of 1937-42 by substituting the quantity units to the explanatory variables of the same period.

2) Manufacturing production in current prices for the period of 1914-38 is also available from the same table. We extend it by adjusting the data from Chosun Economic Statistics Review as mentioned above to cover the period of 1939-42. Real production in Manufacturing for the period of 1914-38 is also available from the same table. Therefore, we need to deflate nominal Manufacturing production for the period of 1939-42 only. As deflator for Manufacturing production during the sub-period, we used estimates of Wholesale Price Index (WPI) of Seoul Metropolitan area in Lee (1971, Table 1-7) which quoted from Chosun Statistical Yearbook (1939) and Price Statistics (1961) by the Bank of Korea.
3) We combine Mining and Manufacturing Production in real prices to generate estimates of real production in the secondary sector

for the entire period of 1914-42.

4) Lastly, we used the following regression equation to extend the estimates of real NNP in the secondary sector for the period of 1911-38 by Mizoguchi and Umemura (1988, Table 8) to cover the sub-period of 1939-42:

$NNP_2 = \alpha + \beta\ Production + \gamma\ T + u$

Variable	Coefficient	Std. Error
Constant	-1,5461.61	2,481.841
Production	0.539974	0.011186
T	-1,723.996	323.2440
Adjusted R^2: 0.99	D.W.statistic: 1.14	

where Production denotes the production in secondary sector.

The resulting estimates of Mining and Manufacturing production and real NNP in the secondary sector are presented in Table 18.

Another interesting data is revealed by National Statistical Office (1995a), which quotes from Chosun Economic Statistical Review (1949) and Chosun Statistical Yearbook. The self-sufficiency ratio (the ratio of domestic products in total consumption including imports) of each sub-sector of manufacturing in 1941 is reported as Table 19. The average self-sufficiency ratio was 72.8 percent with higher ratios in Chemical Products (98.3%) and Food and Beverage Products (95.1%) and lower ratios in Machinery and Tools (28.5%) and Textile Products (50.3%). Therefore, by 1941, the industrialization in Korea under the Japanese colonial rule made some progress even though it was very much dependent on Japanese manufacturing in raw materials and intermediate goods as well as capital and technology.

In the second sub-period of 1943-5, even scant data of production in quantity units are not available. But National Statistical Office (1995a) reports data on crop consumption and imports and export data for this period. Viewing these data would reflect aggregate demand condition during war, we regressed economy-wide Net National Product estimates of Mizoguchi and Umemura (1929-38) and our estimates of NNP (1939-42) on crop consumption and export and import data. The estimated equation is as follows;

TABLE 18

ESTIMATES OF MINING AND MANUFACTURING PRODUCTION AND REAL NNP IN THE SECONDARY SECTOR (1937-42)

(Unit: 1,000Yen in 1934-6 Constant Prices)

Year	Mining Production	Manufacturing Production	Real NNP in Secondary Sector
1937	50,323	865,663	442,348
1938	91,809	728,530	375,597
1939	126,417	990,547	382,676
1940	183,808	994,822	541,122
1941	141,810	1,041,134	572,696
1942	163,476	1,062,889	573,301

TABLE 19

SELF-SUFFICIENCY RATIO

(Unit: 1,000Won, %)

Industry	Domestic Product	Revenue	Domestic Consumption	Self-Sufficiency Ratio
Total	2,112,995	789,709	2,903,704	72.8
Weaving	285,578	282,428	568,006	50.3
Metal	161,528	109,835	271,363	59.5
Machinery	91.996	230,736	322,732	28.5
Ceramic	80.150	37,488	117,638	68.1
Chemistry	819,330	14,321	833,651	98.3
Timber	42,028	13,153	55,181	76.2
Printing	20,977	5,698	26,675	78.6
Food	394,830	20,246	415,076	95.1
Others	217,578	75,804	293,382	74.2

Source: National Statistical Office (1995a)

$$NNP = \alpha + \beta_1 Food\ Consumption + \beta_2 Export + \beta_3 Import + u$$

Variable	Coefficient	Std. Error
Constant	-591,245.2	2,065,948.0
Food Consumption	0.166652	0.110651
Export	-9.071491	4.586290
Import	4.666845	1.601205
Adjusted R^2: 0.66	D.W.statistic: 2.15	

Using the above estimated NNP equation we have generated estimates of NNP during war time of 1943-5. The distribution by

sector was made by using the weight of each sector in our estimate of real NNP in 1942.

c) Estimates of Capital Stocks

As mentioned before, we can use two alternative estimates of capital stocks: Mizoguchi and Umemura (1988) for 1911-38 and Pyo (1996) for 1911-40. Since estimates were derived by commodity-flow method, we need detailed producer goods' production data by items to extend both series. But the only production data in amount available for the period 1939-43 was the 10 sub-sector manufacturing data by National Statistical Office (1995a). Therefore, we have taken the following steps to extend two series:

1) For the primary sector's capital stock series (CS_1) of Mizoguchi and Umemura, we regressed their estimates of real capital stock on their estimates of the primary sector's NNP (NNP_1) for the period of 1918-38 as follows:

$CS_1 = \alpha + \beta\ NNP_1 + \gamma\ T + u$

Variable	Coefficient	Std. Error
Constant	167,309.5	10,693.95
NNP_1	0.053828	0.015461
T	3,369.363	286.0199
Adjusted R^2: 0.95	D.W.statistic: 1.23	

Then using our estimates of the primary NNP for the period of 1939-45 generated above, we extended the series to 1945.

2) For the secondary and the service sector, we regressed their estimates of real capital stock for the period of 1911-38 on their estimates of real NNP in the secondary sector obtaining the following result:

$CS_2 = \alpha + \beta\ NNP_2 + \gamma\ T + u$

Variable	Coefficient	Std. Error
Constant	4,566.328	11,663.97
NNP_2	0.618701	0.100697
T	6,502.086	1,284.541
Adjusted R^2: 0.94	D.W.statistic: 0.86	

$CS_3 = \alpha + \beta\ NNP_3 + \gamma\ T + u$

Variable	Coefficient	Std. Error
Constant	-418,418.0	56,225.50
NNP_3	3.068553	0.274964
T	-14,761.43	5,000.328
Adjusted R^2: 0.97	D.W.statistic: 1.02	

Then, we extended real capital stock data to cover the period of 1939-45 by substituting our estimates of real NNP in the secondary sector during the corresponding period to the explanatory variable.

3) Finally, we distribute the economy-wide capital stock estimates into three sectors by using 1911-38 estimates of Mizoguchi and Umemura series and 1953 estimates of Pyo (1988, Table A-5). From Mizoguchi and Umemura's real capital stock estimates by kind (Table 52), the share of the primary sector including Agriculture and Forestry in total capital stock can be generated by deducting residential and nonresidential structure and equipment stock from the total stock. Then, we applied the relative share of nonresidential structure and equipment in the secondary sector (0.17:0.56) and the service sector (0.83:0.44) respectively in 1953 from Pyo (1988, Table A-5), which is the real net capital stock by kind of assets and nine industries to distribute the non-primary sector's capital stock between the secondary and the service sector.
4) For the series of Pyo (1996), we have taken basically same steps except that we added the generated net investment to the stock value of 1940.

The resulting estimates of capital stocks by three sectors are presented in Table 20. The extended series of capital stock estimates by Mizoguchi and Umemura (1988) has grown at the average annual rate of 4.6 percent as shown in Table A-9 in Appendix. Those by Pyo (1996) grew at 3.1 percent. Among three sectors, the secondary sector was the fastest in the rate of capital accumulation with 6.1 percent and 6.5 percent respectively.

C. The Division of Data between North and South

In order to link the data in colonial period (1911-45) with those of South Korea in the post-war period (1946-99), it is necessary to divide our estimates of the colonial period between North Korea and South Korea. As noted in Pyo (1996), the division of Korean data during the colonial period was attempted by Ban (1974) for agricultural value-added and by Ishikawa (1981). The former study used agricultural production data by area to divide the data between North and South while the latter study used population data.

The division of population data for the period of 1910-42 in Pyo (1996, Table 17) shows that the share of South declined steadily from 0.666 in 1910 to 0.632 in 1942. The division of production amount for the period of 1913-40 (Table 18) shows that the share of South declined rather rapidly from 0.648 in 1913 to 0.454 in 1940 as the industrialization in heavy and chemical industries centered on northern region during the latter half of the colonial period. For the purpose of the present study, we use the share estimates of production to divide NNP and capital stock and the share estimates of population to divide employment data. For employment data after 1942, we used the population share of 1942. For production data after 1940, we used the production share of 1940. The divided estimates of NNP, employment and capital stocks for the south are reported in Table 21.

D. Growth Accounting for the Colonial Period (1911-45)

We have conducted a simple growth accounting for the entire colonial period (1911-45) and the sub-period (1911-38) which is more stable and reliable data. But we need estimates of factor income to apply any kind of growth accounting to our estimates of NNP, employment and capital stocks. Since the NNP estimates by Mizoguchi and Umemura were derived from production side rather than income side, there are no estimates of factor income or shares of factor income yet.

Yamada (1986) presents an interesting estimation result of aggregate Cobb-Douglas production function of the Korean economy for the period of 1919-38. According to his estimation, the share of labor income (the estimated coefficient of labor input) in the primary sector was 0.7045 while the share in the secondary sector

was 0.1348. The former share seems reasonable but the latter share seems too low. On the other hand, Shinohara (1962, p. 334) estimated the share of labor income (wages payroll and salaries payroll) in net income of Japanese manufacturing for the period of 1929-42 and reported that the labor share decreased from the peak of 49.8 percent in 1930 to 28.8 percent by 1942. Since the manufacturing in Korea at that time imported technology and intermediate products and capital goods from Japan, we may use his peak estimate of labor share (49.8%) as Korea's labor share in manufacturing because Korean manufacturing must have been endowed with relatively less capital. Therefore, we have applied 0.7 as the share of labor income in the primary sector, 0.5 as the share of labor income in the secondary sector, and 0.6 as the average of two sectors in the service sector. Since Pyo and Kwon (1991) estimated the South Korea's economy-wide share of labor income in 1961 as 0.48, the above imputation of factor share seems quite reasonable.

For example, according to Mizoguchi and Umemura (1988), the net national products in 1934-36 prices in three sectors are estimated to be 685.6 million yen (61.6%) for the primary sector, 88.2 million yen (7.9%) for the secondary sector, and 339.7 million yen (30.5%) for the tertiary sector. Real net national products in 1938 are 1,107.9 million yen (49.0%), 375.6 million yen (16.6%), and 776.5 million yen (34.4%). Therefore, we can estimate economy-wide share of labor income in 1938 by weighting the above estimated share of each sector's labor income as follows:

$$0.7\times0.616+0.5\times0.079+0.6\times0.305=0.65$$

In Table 20 and 21, we report our estimates of NNP, employment and capital stock in 1934-6 prices for the period of 1911-45 for entire Korea and south Korea respectively. The assumed share of total in each sector and its weighted average for the economy as a whole is attached in Table A-11. Total factor input in Korea and south korea are also attached as Table A-12 and Table A-13 respectively. In Table 21 and 22, the result of growth accounting of the whole economy as well as by sector and by region are presented.

As a summary of growth accounting, we note that there was a significant movement toward industrialization. The average growth

TABLE 20

ECONOMIC ACTIVITIES IN KOREA DURING 1911-45

Year	Value Added (NNP) (Unit: Million Yen in 1934-6 Constant Prices)				Labor Input (Unit: 1,000 Persons)				Capital Stock (Unit: Million Yen in 1936 Constant Prices)			
	Total	I	II	III	Total	I	II	III	Total	I	II	III
1911	883	553	38	257	4,184	3,658	49	476	708	363	39	305
1912	879	549	31	264	4,413	3,859	52	502	707	365	38	304
1913	952	602	44	269	6,333	5,593	68	671	730	378	39	312
1914	1,031	669	45	277	7,357	6,613	75	669	741	373	42	324
1915	1,119	689	82	304	10,881	9,941	104	835	744	372	43	328
1916	1,190	745	93	305	9,963	9,018	194	751	669	325	35	309
1917	1,222	776	84	313	10,464	9,401	198	865	718	377	33	307
1918	1,315	840	104	318	10,726	9,598	186	941	701	370	32	298
1919	1,158	685	88	339	11,006	9,841	204	959	714	377	34	301
1920	1,281	816	84	331	9,806	8,888	167	750	711	383	30	297
1921	1,332	883	83	363	9,999	9,002	171	824	766	387	44	334
1922	1,389	863	91	381	10,238	9,157	188	893	681	256	54	370
1923	1,368	834	91	390	10,339	9,203	189	947	722	259	62	400
1924	1,382	840	93	395	10,415	9,229	197	987	733	259	64	409
1925	1,395	833	101	406	11,011	9,679	216	1,115	763	259	69	435
1926	1,434	826	124	428	11,067	9,733	216	1,117	836	263	86	486
1927	1,537	901	125	451	10,956	9,603	209	1,144	1,034	401	101	530
1928	1,444	806	122	460	10,713	9,373	198	1,141	1,078	401	114	562
1929	1,466	797	127	484	10,713	9,338	197	1,177	1,159	398	138	622
1930	1,603	906	132	503	11,015	9,518	210	1,286	1,260	403	164	692
1931	1,540	832	135	513	10,680	9,155	198	1,326	1,358	395	193	769
1932	1,657	903	151	538	9,574	8,173	155	1,245	1,375	411	192	771
1933	1,781	951	202	559	9,157	7,827	166	1,163	1,368	417	188	762
1934	1,721	865	219	577	9,350	7,935	181	1,232	1,446	411	212	822
1935	2,015	977	296	664	9,803	8,305	206	1,290	1,504	413	230	860
1936	2,120	962	358	718	9,695	8,147	221	1,326	1,626	422	258	945
1937	2,500	1,230	442	730	9,740	8,141	245	1,352	1,567	431	235	900
1938	2,350	1,107	375	776	9,825	8,107	327	1,390	1,550	426	228	895
1939	2,535	1,382	382	770	9,722	7,935	367	1,419	1,747	491	270	985
1940	3,004	1,687	541	776	9,772	7,840	415	1,516	1,839	520	327	991
1941	3,835	2,455	572	806	10,212	8,056	533	1,622	1,899	576	326	997
1942	4,265	2,957	573	735	10,685	8,152	626	1,906	1,952	616	333	1,003
1943	4,022	2,788	540	693	10,917	8,354	705	1,858	1,957	617	330	1,009
1944	3,941	2,732	529	679	11,244	8,604	726	1,914	1,974	625	333	1,015
1945	3,861	2,676	518	665	11,951	9,144	771	2,034	1,991	633	337	1,021
	Average Growth Rate (%)											
1911-24	3.5	3.3	7.1	3.4	7.3	7.4	11.2	5.8	0.3	-2.6	3.9	2.3
1925-38	4.1	2.2	10.6	5.1	-0.9	-1.4	3.2	1.7	5.6	3.9	9.6	5.7
1911-38	3.7	2.6	8.8	4.2	3.2	3.0	7.2	4.0	2.9	0.6	6.8	4.1
1939-45	7.3	11.6	5.2	-2.4	3.5	2.4	13.1	6.2	2.2	4.3	3.7	0.6
1925-45	5.2	6.0	8.5	2.5	0.4	-0.3	6.6	3.1	4.9	4.6	8.2	4.4
1911-45	4.4	4.7	8.0	2.8	3.1	2.7	8.4	4.4	3.1	1.6	6.5	3.6

TABLE 21

ECONOMIC ACTIVITIES IN SOUTH KOREA DURING 1911-45

Year	Value Added (NNP) (Unit: Million Yen in 1934-6 Constant Prices)				Labor Input (Unit: 1,000 Persons)				Capital Stock (Unit: Million Yen in 1936 Constant Prices)			
	Total	I	II	III	Total	I	II	III	Total	I	II	III
1911	572	358	24	166	2,786	2,436	33	317	458	235	25	197
1912	569	355	20	171	2,921	2,554	34	332	458	236	24	197
1913	617	390	28	174	4,173	3,686	45	442	473	245	25	202
1914	677	440	29	182	4,834	4,344	49	439	486	245	28	213
1915	772	475	57	209	7,159	6,541	68	549	513	256	29	226
1916	816	511	64	209	6,556	5,934	127	494	459	222	24	212
1917	845	537	58	217	6,875	6,176	130	568	497	261	23	212
1918	906	579	72	219	7,025	6,287	122	616	483	255	22	205
1919	796	471	60	233	7,231	6,466	134	630	491	259	23	207
1920	890	567	59	230	6,540	5,928	111	500	494	266	21	206
1921	932	618	58	254	6,629	5,968	113	546	536	271	30	234
1922	968	601	63	266	6,757	6,043	124	589	475	178	37	258
1923	930	567	62	265	6,824	6,074	125	625	491	176	42	272
1924	920	559	62	263	6,874	6,091	130	651	488	172	43	272
1925	933	557	67	272	7,256	6,378	142	735	511	173	46	291
1926	981	565	84	293	7,293	6,414	142	736	572	180	58	332
1927	1,040	610	85	305	7,198	6,309	137	751	700	271	68	359
1928	944	527	79	301	7,028	6,148	130	748	705	262	75	367
1929	943	512	82	311	7,017	6,116	129	770	745	256	88	400
1930	1,100	621	90	345	7,204	6,224	137	841	864	276	112	475
1931	975	527	85	324	6,985	5,987	129	867	860	250	122	487
1932	1,057	576	96	343	6,251	5,337	101	813	877	262	122	491
1933	1,106	590	125	347	5,970	5,103	108	758	849	259	117	473
1934	1,077	539	136	359	6,086	5,165	118	802	900	256	132	512
1935	1,094	530	160	360	6,391	5,415	134	841	816	224	124	467
1936	1,113	505	188	377	6,311	5,303	144	863	854	221	135	496
1937	1,220	600	215	356	6,321	5,283	159	878	764	210	114	439
1938	1,107	521	176	365	6,366	5,253	212	901	730	200	107	421
1939	1,133	617	171	344	6,261	5,110	236	914	781	219	121	440
1940	1,364	766	245	352	6,205	4,978	263	963	882	236	148	497
1941	1,741	1,115	260	366	6,454	5,091	337	1,025	892	261	148	482
1942	1,936	1,342	260	333	6,753	5,152	395	1,204	877	279	151	446
1943	1,826	1,266	245	314	6,900	5,279	445	1,174	856	280	150	426
1944	1,789	1,240	240	308	7,106	5,438	458	1,209	857	283	151	421
1945	1,752	1,215	235	302	7,553	5,779	487	1,285	857	287	153	416
	Average Growth Rate (%)											
1911-24	3.7	3.5	7.3	3.6	7.2	7.3	11.1	5.7	0.5	-2.4	4.1	2.5
1925-38	1.3	-0.5	7.6	2.3	-1.0	-1.5	3.1	1.6	2.8	1.1	6.7	2.9
1911-38	2.5	1.4	7.5	3.0	3.1	2.9	7.1	3.9	1.7	-0.6	5.5	2.8
1939-45	7.5	11.9	5.5	-2.2	0.2	-0.5	6.3	2.8	1.6	4.6	4.0	-0.9
1925-45	3.2	4.0	6.4	0.5	3.2	2.1	12.8	5.9	2.6	2.6	6.2	1.8
1911-45	3.3	3.7	6.8	1.8	3.0	2.6	8.2	4.2	1.9	0.6	5.4	2.2

TABLE 22

THE AVERAGE ANNUAL GROWTH RATE OF VALUE ADDED, TFI AND TFP IN KOREA

Year	Value Added and Factor Input	Total	I	II	III
1911-24	Total Factor Productivity	-3.3	-3.8	-1.6	-1.5
	Value Added	3.5	3.3	7.1	3.4
	Labor Input	7.3	7.4	11.2	5.8
	Capital Input	0.3	-2.6	3.9	2.3
	Total Factor Input	6.8	7.1	8.7	4.9
1925-38	Total Factor Productivity	4.8	3.5	5.3	2.4
	Value Added	4.1	2.2	10.6	5.1
	Labor Input	-0.9	-1.4	3.2	1.7
	Capital Input	5.6	3.9	9.6	5.7
	Total Factor Input	-0.7	-1.3	5.3	2.7
1911-38	Total Factor Productivity	0.6	-0.3	1.8	0.1
	Value Added	3.7	2.6	8.8	4.2
	Labor Input	3.2	3.0	7.2	4.0
	Capital Input	2.9	0.6	6.8	4.1
	Total Factor Input	3.1	2.9	7.0	4.1
1939-45	Total Factor Productivity	3.6	9.2	-4.4	-6.5
	Value Added	7.3	11.6	5.2	-2.4
	Labor Input	3.5	2.4	13.1	6.2
	Capital Input	2.2	4.3	3.7	0.6
	Total Factor Input	3.7	2.4	9.6	4.1
1925-45	Total Factor Productivity	4.4	6.2	1.5	-0.7
	Value Added	5.2	6.0	8.5	2.5
	Labor Input	0.4	-0.3	6.6	3.1
	Capital Input	4.9	4.6	8.2	4.4
	Total Factor Input	0.8	-0.2	7.0	3.2
1911-45	Total Factor Productivity	1.2	2.0	0.3	-1.3
	Value Added	4.4	4.7	8.0	2.8
	Labor Input	3.1	2.7	8.4	4.4
	Capital Input	3.1	1.6	6.5	3.6
	Total Factor Input	3.2	2.7	7.7	4.1

TABLE 23

THE AVERAGE ANNUAL GROWTH RATE OF VALUE ADDED, TFI AND TFP IN SOUTH KOREA

Year	Value Added and Factor Input	Total	I	II	III
1911-24	Total Factor Productivity	-3.0	-3.6	-1.4	-1.3
	Value Added	3.7	3.5	7.3	3.6
	Labor Input	7.2	7.3	11.1	5.7
	Capital Input	0.5	-2.4	4.1	2.5
	Total Factor Input	6.7	7.1	8.7	4.9
1925-38	Total Factor Productivity	2.3	0.9	3.5	0.4
	Value Added	1.3	-0.5	7.6	2.3
	Labor Input	-1.0	-1.5	3.1	1.6
	Capital Input	2.8	1.1	6.7	2.9
	Total Factor Input	-1.0	-1.4	4.1	1.9
1911-38	Total Factor Productivity	-0.4	-1.4	1.0	-0.7
	Value Added	2.5	1.4	7.5	3.0
	Labor Input	3.1	2.9	7.1	3.9
	Capital Input	1.7	-0.6	5.5	2.8
	Total Factor Input	2.9	2.8	6.5	3.7
1939-45	Total Factor Productivity	4.6	9.8	-4.7	-6.6
	Value Added	7.5	11.9	5.5	-2.2
	Labor Input	3.2	2.1	12.8	5.9
	Capital Input	1.6	4.6	4.0	-0.9
	Total Factor Input	2.9	2.1	10.2	4.4
1925-45	Total Factor Productivity	2.6	4.4	0.1	-2.1
	Value Added	3.2	4.0	6.4	0.5
	Labor Input	0.2	-0.5	6.3	2.8
	Capital Input	2.6	2.6	6.2	1.8
	Total Factor Input	0.6	-0.4	6.3	2.6
1911-45	Total Factor Productivity	0.2	1.2	-0.5	-1.9
	Value Added	3.3	3.7	6.8	1.8
	Labor Input	3.0	2.6	8.2	4.2
	Capital Input	1.9	0.6	5.4	2.2
	Total Factor Input	3.1	2.5	7.3	3.7

rate of capital stock in the secondary industry is estimated to be 6.1 percent and 5.4 percent with Mizoguchi and Umemura's (1988) estimates and Pyo's (1996) estimates respectively. It was the main engine of the growth in Net National Product during the entire period (1911-45) which grew at the average annual rate of 4.4 percent.

The rapid accumulation of capital in colonial Korea has been noted by Ahn and Hori (1993). They observed that the number of firms in Korea increased by more than six times between 1920 and 1940 while those in Japan had been just doubled. They also noted that while the paid-in capital in Japanese firms increased by about three times that in Korean firms increased by more than eight times during the same period. The study shows also that while the share of paid-in capital in Manufacturing increased from 14.2 percent in 1920 to 50.7 percent in 1940. Therefore, even though the debate on the nature of capitalism under the colonial rule remains to continue, we must acknowledge the fact that there was a significant progress toward industrialization during the colonial period in Korea.

IV. Economic Growth in South Korea (1946-99)

The Korean economy after its independence from Japan in 1945 was divided between North and South and disrupted again by Korean War (1950-3). Therefore, reliable economic data for the period of 1946-52 are not readily available. The period after the independence can be divided into the period of 1946-52 and that of 1953-99. The latter period has National Accounts data by the Bank of Korea. But old national accounts data in the Bank of Korea (1984) needs to be linked with new national accounts data in the Bank of Korea (1994, 1999) as pointed out in Mizoguchi (1999).

The latter period can be divided into three sub-periods; (1) Reconstruction Period (1953-61) (2) The First Phase of Industrialization (1962-73), and (3) The Second Phase of Industrialization (1974-99). Since we are interested in primarily constructing consistent national account data and factor inputs data, we will not analyze the Korean economy period by period. But we will report separate results of growth accounting for each sub-period.

A. The Post-Independence Period (1946-52)

After Korea's independence from Japan, a series of political disruption followed. There was the division between North Korea (DPRK) and South Korea (ROK) as a consequence of the beginning of the cold war. Even after the government of the Republic of Korea was formally established in the South in 1948, political and economic conditions were not quite stabilized.

According to National Statistical Office (1995c), the major historical events during this period includes agricultural land reform in March 1950, the breakout of Korean War on June 25, 1950, and Monetary Denomination Reform on February 15, 1953, under which new one Hwan was exchanged with 100 old won. One of the most dramatic indicators during this period is the exchange rate of Korean money with US dollar. The official exchange rate started from 15 won per dollar on October 1, 1945 but continued to depreciate to the level of 2,500 won per dollar by November 1950. Then after the Monetary Denomination Reform, it depreciated further to the level of 6,000 won (60 Hwan) per dollar by February 1953 and again 18,000 won (180 Hwan) by November 1954. Such a sharp depreciation of the Korean currency reflects hyper-inflation after the independence. As Mason *et al.* (1981, pp.117-9) notes, the wholesale price index increased by 53 percent in 1951, 25-8 percent in 1953-4, and 82 percent in 1955. They argue that even though a direct comparison of GNP between pre-1953 and 1953 is impossible, the comparison of net commodity production statistics indicates that production in almost all sectors has declined between 1939-40 and 1953. By 1953, Korean economy after Korean War was a very poor economy with per capita income of 134 dollars in 1970 prices and with agricultural share and manufacturing share of GNP being 47 percent and 9 percent respectively.

a) Estimates of GDP

Since this sub-period does not have reliable estimates of value added, we continued to use the econometric method of estimating missing data by using production data in quantity units as before. The following equation has been estimated for this purpose using 1953-61 data:

$NNP_1 = \alpha + \beta_1 Rice + \beta_2 Barley + \beta_3 Miscell + \beta_4 Potatoes + \beta_5 Fruits + u$

Variable	Coefficient	Std. Error
Constant	-5.240706	82.46080
Rice	0.000217	0.000334
Barley	0.0000383	0.0000612
Miscell	-0.000106	0.000651
Potatoes	0.002443	0.000628
Fruits	0.002170	0.000441
Adjusted R^2: 0.98	D.W.statistic: 1.70	

$Mining = \alpha + \beta_1 Silver + \beta_2 Tungsten + \beta_3 Talc + u$

Variable	Coefficient	Std. Error
Constant	12.07834	3.814301
Silver	0.001430	0.000430
Tungsten	0.000438	0.000811
Talc	0.000927	0.000345
Adjusted R^2: 0.91	D.W.statistic: 2.96	

$Manufacturing = \alpha + \beta_1 Cotton + \beta_2 Carbide + \beta_3 Pottery + \gamma T + u$

Variable	Coefficient	Std. Error
Constant	-96.03437	36.63624
Cotton	0.001776	0.000728
Carbide	0.008136	0.005912
Pottery	0.000610	0.001192
Trend	44.31929	7.581147
Adjusted R^2: 0.99	D.W.statistic: 1.441183	

b) Estimates of Capital Stocks

We applied the average growth rate (6.3%) of total capital stock estimated from the period of 1953-61 to the period 1946-52. And then, we applied the 1953 industrial shares of capital stocks to 1946-52 estimates.

B. The Post-Korean War Period (1953-99)

The data situation after the Korean War continued to improve, but both employment data during 1953-62 and capital stock data before 1968 need to be estimated indirectly. GDP data after 1953

are available from National Income Accounts by the Bank of Korea but those before 1970 need to be linked to those after 1970.

In order to link GDP data in old National Income Accounts with new National Accounts, we have taken the following steps:

1) Old National Income Accounts have GDP series of 1953-70 in 1975 prices and new National Accounts have GDP series of 1970-99 in 1990 prices. So first we fixed the latter series and tried to adjust the former series.
2) 1975 GDP in old series are both nominal prices as well as real prices because it was the base year. So using GDP deflator from new accounts, we can convert 1975 GDP into 1975 GDP in 1990 prices. Accordingly we convert old series of 1953-70 in 1975 prices into the series in 1990 prices.

The consistent time series of employment data by industries are available only after 1963. For the period of 1945-62, we have to estimate the employment data indirectly.

After an extensive survey of population and employment data, we have taken the following steps:

1) From the population data (1945-95) in National Statistical Office (1995c), we have constructed a time-series of population statistics. For the period of 1945-60, we used survey estimates of population. For the years 1950, 1951, and 1954 when the data are missing, we interpolated the series. For the period after 1960, we used estimated population series.
2) We have also used National Statistical Office (1995c) data on population of age 15-64. The missing data in years 1945 and 1946 have been estimated by applying the ratio of the age group to total population in year 1947. For other years of missing estimates (1948, 1950, 1951, and 1954) We applied interpolation.
3) Since the data on economically active population (EAP) are available only after 1963, we have estimated the following regression equation using population with age 15-64 (POP 15-64) as independent variable for the period of 1963-95:

Economically Active Population $= \alpha + \beta$ *POP 15-64* $+ u$

Variable	Coefficient	Std. Error
Constant	-535.6167	372.1580
POP 15-64	0.363511	0.201341
Trend	165.8593	128.2711
Adjusted R^2: 0.99	D.W.statistic: 0.29	

Using the above equation, we estimated economically active population for the period of 1946-62.

4) Since the consistent employment data is also available only after 1963, we have estimated the following employment equation using EAP and a linear trend variable as independent variables :

Employment $= \alpha + \beta$ *EAP* $+ u$

Variable	Coefficient	Std. Error
Constant	-53.15144	76.30733
EAP	0.972538	0.005317
Adjusted R^2: 0.99	D.W.statistic: 0.53	

5) After generating employment data for the period of 1946-62, we used data on population by industries in Statistical Yearbook in selected years (1956, 1959, and 1962) to distribute the employment among three industries (see Table A-7 in Appendix). For the years 1946-55, we have used the same employment share in 1956. For other years, we have interpolated employment shares.

The generated estimates of employment, capital stock, and GDP are presented in Table 24.

C. Growth Accounting for the Post-War Period (1946-99)

During the fifty years after the independence, Korean economy transformed itself completely from agricultural economy to industrial economy. In order to identify sources of growth, we have applied growth accounting to the post-war data. We present the result in Table 25 with estimated share of factor income in Table A-14 and index of total factor input in Table 15 in Appendix.

TABLE 24

ECONOMIC ACTIVITIES IN SOUTH KOREA DURING 1946-99

Year	GDP (Unit: Billion Won at 1990 Constant Prices)				Employment (Unit: Person)				Capital Stock (Unit: Billion Won at 1990 Constant Prices)			
	Total	I	II	III	Total	I	II	III	Total	I	II	III
1946	10,207	4,151	157	5,900	3,166	2,398	207	562	3,705	267	435	3,004
1947	10,508	4,318	187	6,003	3,415	2,560	227	628	3,929	281	482	3,166
1948	11,929	4,890	231	6,808	3,663	2,718	248	697	4,168	297	535	3,337
1949	12,711	5,193	308	7,210	3,911	2,872	270	770	4,423	313	593	3,517
1950	11,728	4,775	324	6,628	4,130	3,001	290	839	4,694	330	658	3,707
1951	12,501	5,071	366	7,064	4,349	3,126	310	912	4,788	336	671	3,781
1952	11,946	4,819	442	6,684	4,567	3,249	332	987	4,883	343	684	3,857
1953	14,228	5,747	509	7,972	4,913	3,457	363	1,094	4,981	350	698	3,934
1954	14,799	6,207	548	8,045	5,119	3,562	384	1,173	5,244	365	774	4,105
1955	15,366	6,300	652	8,414	5,325	3,665	406	1,254	5,568	385	864	4,320
1956	15,173	5,865	734	8,574	5,240	3,566	406	1,268	5,936	407	964	4,565
1957	16,036	6,417	820	8,800	5,530	3,721	436	1,374	6,370	433	1,080	4,857
1958	16,710	6,885	889	8,936	5,769	3,837	461	1,470	6,768	457	1,195	5,116
1959	17,222	6,864	983	9,375	6,101	4,011	496	1,594	7,180	481	1,318	5,382
1960	17,380	6,720	1,108	9,552	6,761	4,393	557	1,810	7,627	507	1,452	5,669
1961	18,332	7,540	1,160	9,633	7,012	4,502	587	1,923	8,098	534	1,594	5,970
1962	18,789	7,088	1,327	10,375	7,282	4,620	618	2,044	8,782	571	1,777	6,433
1963	20,373	7,761	1,499	11,113	7,563	4,765	658	2,140	9,692	623	2,014	7,055
1964	22,210	8,972	1,663	11,576	7,698	4,750	685	2,271	10,499	667	2,237	7,596
1965	23,340	8,882	1,944	12,514	8,112	4,746	844	2,531	11,571	726	2,524	8,321
1966	25,901	9,912	2,218	13,771	8,325	4,812	899	2,614	13,394	831	2,988	9,575
1967	27,283	9,327	2,645	15,311	8,624	4,752	1,095	2,777	15,674	961	3,573	11,140
1968	30,021	9,449	3,198	17,374	9,061	4,748	1,259	3,054	18,115	1,241	3,781	13,092
1969	33,787	10,441	3,759	19,587	9,285	4,745	1,337	3,213	21,510	1,688	4,500	15,321
1970	36,306	10,294	4,489	21,523	9,617	4,847	1,375	3,395	24,775	1,969	5,236	17,570
1971	39,390	10,614	5,227	23,549	9,946	4,794	1,412	3,740	27,954	2,045	6,224	19,685
1972	41,287	10,916	5,861	24,511	10,379	5,241	1,463	3,674	31,210	2,145	6,929	22,135
1973	46,572	11,730	7,528	27,313	10,942	5,449	1,784	3,720	36,140	2,392	8,335	25,413
1974	50,330	12,535	8,735	29,060	11,421	5,482	2,022	3,917	42,063	3,071	9,905	29,087
1975	53,670	12,998	9,819	30,854	11,692	5,343	2,233	4,116	47,760	2,823	11,980	32,958
1976	59,983	14,202	11,909	33,872	12,412	5,511	2,706	4,195	55,275	2,782	14,862	37,631
1977	66,172	14,637	13,746	37,789	12,812	5,343	2,870	4,600	65,538	3,168	18,993	43,377
1978	72,385	13,218	16,605	42,562	13,412	5,150	3,098	5,164	80,774	4,667	23,828	52,279
1979	77,547	14,181	18,115	45,251	13,602	4,870	3,210	5,522	96,633	6,009	28,856	61,768
1980	75,466	11,431	17,800	46,236	13,683	4,652	3,079	5,952	108,960	6,808	31,689	70,463

TABLE 24 (CONTINUED)

Year	GDP (Unit: Billion Won at 1990 Constant Prices)				Employment (Unit: Person)				Capital Stock (Unit: Billion Won at 1990 Constant Prices)			
	Total	I	II	III	Total	I	II	III	Total	I	II	III
1981	80,150	13,067	19,484	47,599	14,023	4,796	2,987	6,240	119,616	7,315	34,019	78,282
1982	86,231	14,013	20,633	51,586	14,379	4,616	3,149	6,629	131,247	7,682	36,368	87,197
1983	96,146	15,106	23,691	57,349	14,505	4,308	3,380	6,817	145,608	8,299	38,691	98,617
1984	104,489	14,891	27,561	62,037	14,429	3,910	3,492	7,027	161,176	8,967	42,517	109,692
1985	111,330	15,425	29,237	66,668	14,970	3,728	3,653	7,575	176,698	9,620	47,297	119,782
1986	124,194	16,148	34,788	73,258	15,505	3,659	4,016	7,830	194,685	10,569	53,459	130,657
1987	138,499	15,163	41,375	81,961	16,354	3,582	4,595	8,177	217,122	12,046	62,746	142,331
1988	154,111	16,517	46,915	90,679	16,869	3,475	4,808	8,586	242,364	13,202	73,190	155,972
1989	163,950	16,350	48,814	98,787	17,560	3,442	4,969	9,149	272,907	15,669	84,884	172,354
1990	179,539	15,592	53,376	110,571	18,085	3,237	4,991	9,856	314,303	17,633	98,377	198,293
1991	195,936	15,661	58,136	122,139	18,612	3,071	5,062	10,479	360,059	19,703	111,936	228,420
1992	205,860	16,603	60,918	128,339	18,961	2,996	4,892	11,073	401,548	21,357	122,297	257,894
1993	216,945	16,123	63,882	136,940	19,253	2,830	4,698	11,725	444,626	22,628	130,983	291,014
1994	236,375	16,380	70,514	149,481	19,837	2,698	4,741	12,398	493,904	23,910	144,447	325,547
1995	257,501	16,986	77,997	162,518	20,432	2,534	4,824	13,074	550,522	25,324	162,750	362,449
1996	275,691	17,658	83,693	174,340	20,817	2,429	4,715	13,673	611,860	26,989	182,515	402,357
1997	290,941	18,421	88,235	184,285	23,110	2,385	4,508	16,217	664,577	28,761	195,839	439,978
1998	266,622	17,206	81,470	167,947	21,472	2,480	3,819	15,173	672,049	28,797	196,797	446,455
1999	297,250	18,006	99,079	180,165	21,757	2,349	4,026	15,382	698,719	29,602	203,142	465,975
Average Growth Rate (%)												
1946-52	2.7	2.5	18.8	2.1	6.3	5.2	8.2	9.8	4.7	4.3	7.8	4.3
1953-61	3.2	3.5	10.8	2.4	4.5	3.4	6.2	7.3	6.3	5.4	10.9	5.4
1962-73	8.6	4.7	17.1	9.2	3.8	1.5	10.1	5.6	13.7	13.9	15.1	13.3
1974-99	7.4	1.5	10.2	7.6	2.6	-3.3	2.8	5.6	11.9	9.5	12.8	11.7
1962-99	7.7	2.6	12.4	8.0	3.0	-1.8	5.2	5.6	12.6	11.3	13.7	12.3
1953-99	6.8	2.5	12.1	7.0	3.3	-0.8	5.4	5.9	11.3	10.1	13.1	10.9
1946-99	6.6	2.8	12.9	6.7	3.7	0.0	5.8	6.4	10.4	9.3	12.3	10.0

Sources: Mizoguchi (1988), Pyo (1996), and National Statistical Office (1995c)

TABLE 25

THE AVERAGE ANNUAL GROWTH RATE OF VALUE ADDED, TFI AND TFP IN SOUTH KOREA (1946-99)

Year	Value Added and Factor Input	Total	I	II	III
1946-52	Total Factor Productivity	-3.4	-2.7	10.4	-7.1
	Value Added	2.7	2.5	18.8	2.1
	Labor Input	6.3	5.2	8.2	9.8
	Capital Input	4.7	4.3	7.8	4.3
	Total Factor Input	6.1	5.2	8.4	9.2
1953-61	Total Factor Productivity	-3.6	0.1	4.3	-4.2
	Value Added	3.2	3.5	10.8	2.4
	Labor Input	4.5	3.4	6.2	7.3
	Capital Input	6.3	5.4	10.9	5.4
	Total Factor Input	6.8	3.4	6.5	6.6
1962-73	Total Factor Productivity	-0.3	1.8	6.9	2.3
	Value Added	8.6	4.7	17.1	9.2
	Labor Input	3.8	1.5	10.1	5.6
	Capital Input	13.7	13.9	15.1	13.3
	Total Factor Input	9.04	8.0	12.6	10.3
1974-99	Total Factor Productivity	-0.4	0.4	2.4	-1.2
	Value Added	7.4	1.5	10.2	7.6
	Labor Input	2.6	-3.3	2.8	5.6
	Capital Input	11.9	9.5	12.8	11.7
	Total Factor Input	7.8	1.1	7.8	8.8
1962-99	Total Factor Productivity	1.2	0.7	3.6	-0.3
	Value Added	7.7	2.6	12.4	8.0
	Labor Input	3.0	-1.8	5.2	5.6
	Capital Input	12.6	11.3	13.7	12.3
	Total Factor Input	6.5	1.9	8.8	8.3
1953-99	Total Factor Productivity	0.2	0.3	3.8	-0.9
	Value Added	6.8	2.5	12.1	7.0
	Labor Input	3.3	-0.8	5.4	5.9
	Capital Input	11.3	10.1	13.1	10.9
	Total Factor Input	6.6	2.2	8.3	7.9
1946-99	Total Factor Productivity	0.0	0.2	4.5	-1.4
	Value Added	6.6	2.8	12.9	6.7
	Labor Input	3.7	0.0	5.8	6.4
	Capital Input	10.4	9.3	12.3	10.0
	Total Factor Input	6.6	2.6	8.4	8.1

The result of growth accounting for the post-war period reaffirms our earlier finding in Pyo and Kwon (1999) that the Korean growth has been basically of input-driven nature with very little contribution of total factor productivity. The contribution of capital accumulation has been dominant source of industrial growth.

D. Integrated Series (1911-99)

We attempted to integrate our estimates of two periods (1911-45 and 1946-99) to construct a consistent long-run series of GDP, employment and capital stocks. In order to accomplish this task we need deflator data for both GDP and capital stock. We have applied two price series, WPI reported in Lee (1971) and Price Index Table in National Wealth Survey of 1968. But due to changes in denomination and hyper-inflation around 1945, we could not estimate a reasonable series.

The alternative approach we have taken is to extend our estimate of the post-war series to 1945 and then, since there is already 1945 data from the pre-war period, we made indices of the pre-war data and linked them with the post-war series as shown in Table 26.

The result of growth accounting from the integrated series is summarized in Table 27 and the index of total factor input constructed from the integrated series is attached as table A-16 in Appendix.

Throughout the entire period of 1911-99, the Korean economy has grown at the rate of 5.6 percent in terms of real value-added. The factor input has grown at the rate of 3.4 percent while the capital input has grown at the rate of 8.0 percent. As a consequence, the total factor input has grown at the rate of 5.9 percent resulting in -0.3 percent growth of total factor productivity. Thus the integrated series reaffirms that the Korean growth in the twentieth century has been basically of input-driven nature with very little contribution of total factor productivity.

Hence, in terms of sectoral growth accounting, the secondary sector of Mining and Manufacturing has recorded a remarkable accelerated growth in value-added (9.8%), labor input (6.1%) and capital input (10.2%). The total factor input in the sector has grown at the rate of 8.3 percent and the total factor productivity

TABLE 26

ECONOMIC ACTIVITIES IN KOREA: INDEX OF INTERGRATED SERIES (1911-99)

Year	Value Added				Employment				Capital Stock			
	Total	I	II	III	Total	I	II	III	Total	I	II	III
1911	1.33	5.54	0.05	2.56	6.12	27.84	0.45	1.53	0.26	0.50	0.04	0.28
1912	1.32	5.49	0.04	2.64	6.46	29.37	0.47	1.61	0.26	0.50	0.04	0.28
1913	1.43	6.03	0.06	2.68	9.27	42.57	0.62	2.16	0.27	0.52	0.04	0.29
1914	1.55	6.70	0.06	2.76	10.77	50.33	0.68	2.15	0.27	0.52	0.05	0.30
1915	1.69	6.90	0.12	3.03	15.92	75.65	0.94	2.69	0.27	0.51	0.05	0.31
1916	1.79	7.45	0.13	3.05	14.58	68.63	1.75	2.41	0.24	0.45	0.04	0.29
1917	1.84	7.76	0.12	3.13	15.31	71.54	1.79	2.78	0.26	0.52	0.04	0.29
1918	1.98	8.41	0.15	3.18	15.69	73.05	1.68	3.03	0.25	0.51	0.04	0.28
1919	1.74	6.86	0.12	3.38	16.10	74.90	1.85	3.08	0.26	0.52	0.04	0.28
1920	1.93	8.16	0.12	3.30	14.35	67.64	1.51	2.41	0.26	0.53	0.03	0.28
1921	2.01	8.83	0.12	3.63	14.63	68.51	1.55	2.65	0.28	0.53	0.05	0.31
1922	2.09	8.63	0.13	3.80	14.98	69.69	1.70	2.87	0.25	0.35	0.06	0.34
1923	2.06	8.34	0.13	3.89	15.13	70.04	1.71	3.04	0.26	0.36	0.07	0.37
1924	2.08	8.41	0.13	3.94	15.24	70.24	1.79	3.17	0.27	0.36	0.07	0.38
1925	2.10	8.33	0.14	4.05	16.11	73.66	1.96	3.59	0.28	0.36	0.08	0.40
1926	2.16	8.26	0.17	4.27	16.19	74.07	1.95	3.59	0.30	0.36	0.09	0.45
1927	2.32	9.01	0.18	4.49	16.03	73.08	1.89	3.68	0.38	0.55	0.11	0.49
1928	2.18	8.06	0.17	4.59	15.68	71.33	1.79	3.67	0.39	0.55	0.13	0.52
1929	2.21	7.98	0.18	4.83	15.68	71.07	1.79	3.78	0.42	0.55	0.15	0.58
1930	2.42	9.06	0.19	5.02	16.12	72.43	1.90	4.14	0.46	0.56	0.18	0.64
1931	2.32	8.33	0.19	5.11	15.63	69.67	1.79	4.26	0.49	0.55	0.21	0.72
1932	2.50	9.03	0.21	5.37	14.01	62.20	1.40	4.00	0.50	0.57	0.21	0.72
1933	2.68	9.51	0.28	5.58	13.40	59.57	1.50	3.74	0.50	0.58	0.21	0.71
1934	2.60	8.65	0.31	5.75	13.68	60.39	1.64	3.96	0.53	0.57	0.23	0.76
1935	3.04	9.77	0.41	6.62	14.34	63.21	1.87	4.15	0.55	0.57	0.25	0.80
1936	3.19	9.62	0.50	7.16	14.19	62.00	2.00	4.26	0.59	0.58	0.28	0.88
1937	3.77	12.31	0.62	7.28	14.25	61.96	2.22	4.35	0.57	0.60	0.26	0.84
1938	3.54	11.08	0.53	7.74	14.38	61.70	2.95	4.47	0.56	0.59	0.25	0.83
1939	3.82	13.82	0.54	7.68	14.23	60.39	3.32	4.56	0.64	0.68	0.30	0.92
1940	4.52	16.87	0.76	7.73	14.30	59.67	3.75	4.88	0.67	0.72	0.36	0.92
1941	5.78	24.56	0.80	8.04	14.94	61.31	4.81	5.21	0.69	0.79	0.36	0.93
1942	6.42	29.57	0.80	7.33	15.63	62.04	5.65	6.13	0.71	0.85	0.36	0.93
1943	6.06	27.88	0.76	6.91	15.97	63.57	6.36	5.97	0.71	0.85	0.36	0.94
1944	5.94	27.32	0.74	6.77	16.45	65.48	6.55	6.15	0.72	0.86	0.37	0.94
1945	5.81	26.76	0.73	6.63	17.49	69.59	6.97	6.54	0.72	0.87	0.37	0.95
1946	5.80	26.62	0.73	6.63	17.51	74.07	4.14	5.70	0.82	1.00	0.42	1.08
1947	5.96	27.69	0.74	6.75	18.88	79.07	4.55	6.37	0.93	1.13	0.48	1.21
1948	6.76	31.36	0.86	7.65	20.25	83.95	4.97	7.07	1.04	1.28	0.58	1.32
1949	7.16	33.30	0.90	8.10	21.63	88.72	5.40	7.81	1.14	1.41	0.66	1.44
1950	6.58	30.62	0.82	7.45	22.84	92.70	5.80	8.52	1.23	1.53	0.67	1.58

TABLE 26 (CONTINUED)

Year	Value Added				Employment				Capital Stock			
	Total	I	II	III	Total	I	II	III	Total	I	II	III
1951	7.01	32.52	0.88	7.94	24.05	96.57	6.22	9.25	1.34	1.66	0.75	1.70
1952	6.65	30.91	0.84	7.51	25.26	100.35	6.64	10.02	1.44	1.79	0.78	1.85
1953	7.92	36.86	1.00	8.96	27.17	106.78	7.27	11.10	1.58	1.98	0.94	1.98
1954	8.24	39.81	1.13	8.97	28.31	110.04	7.70	11.90	1.67	2.07	1.02	2.07
1955	8.56	40.40	1.26	9.40	29.45	113.21	8.14	12.72	1.77	2.18	1.12	2.17
1956	8.45	37.62	1.34	9.61	28.97	110.14	8.14	12.86	1.89	2.31	1.23	2.29
1957	8.93	41.15	1.55	9.78	30.58	114.94	8.73	13.94	2.03	2.46	1.36	2.43
1958	9.31	44.16	1.66	9.93	31.90	118.53	9.24	14.92	2.15	2.59	1.49	2.56
1959	9.59	44.02	1.90	10.33	33.74	123.91	9.93	16.17	2.28	2.73	1.63	2.69
1960	9.68	43.10	2.05	10.54	37.39	135.71	11.17	18.37	2.43	2.87	1.77	2.83
1961	10.21	48.36	2.18	10.58	38.77	139.08	11.75	19.51	2.58	3.03	1.93	2.97
1962	10.47	45.46	2.50	11.35	40.27	142.72	12.39	20.74	2.79	3.24	2.13	3.20
1963	11.35	49.77	2.87	12.08	41.82	147.18	13.18	21.72	3.08	3.53	2.39	3.51
1964	12.37	57.54	3.15	12.54	42.57	146.72	13.73	23.04	3.34	3.78	2.64	3.77
1965	13.00	56.96	3.76	13.41	44.85	146.59	16.90	25.68	3.68	4.12	2.96	4.13
1966	14.43	63.57	4.38	14.63	46.03	148.64	18.01	26.52	4.26	4.71	3.48	4.75
1967	15.20	59.82	5.23	16.15	47.69	146.79	21.94	28.17	4.99	5.45	4.13	5.52
1968	16.72	60.60	6.63	17.92	50.10	146.67	25.23	30.98	5.76	7.04	4.42	6.55
1969	18.82	66.96	8.28	19.64	51.34	146.57	26.79	32.59	6.84	9.57	5.19	7.69
1970	20.22	66.02	9.42	21.72	53.18	149.73	27.55	34.44	7.88	11.17	5.97	8.85
1971	21.94	68.07	10.34	24.10	55.00	148.09	28.29	37.94	8.89	11.60	7.10	9.84
1972	23.00	70.01	11.15	25.22	57.39	161.91	29.32	37.28	9.93	12.17	8.04	10.99
1973	25.94	75.23	14.16	27.69	60.50	168.33	35.73	37.75	11.50	13.56	9.54	12.62
1974	28.03	80.39	16.24	29.24	63.15	169.35	40.50	39.75	13.38	17.41	11.12	14.51
1975	29.89	83.36	18.06	30.93	64.65	165.06	44.74	41.76	15.20	16.01	13.27	16.42
1976	33.41	91.09	21.41	33.83	68.63	170.24	54.21	42.56	17.59	15.78	16.23	18.69
1977	36.86	93.87	25.44	36.87	70.84	165.04	57.50	46.67	20.85	17.96	20.79	21.18
1978	40.32	84.77	31.38	40.36	74.16	159.09	62.07	52.39	25.70	26.47	25.84	25.53
1979	43.19	90.95	33.99	42.88	75.21	150.42	64.31	56.03	30.75	34.08	31.44	29.94
1980	42.03	73.31	33.52	44.08	75.66	143.71	61.68	60.39	34.67	38.61	34.95	34.08
1981	44.64	83.80	35.36	45.96	77.54	148.15	59.84	63.31	38.06	41.49	38.08	37.70
1982	48.03	89.87	38.56	49.03	79.51	142.58	63.09	67.25	41.76	43.57	41.14	42.00
1983	53.55	96.88	45.12	53.35	80.20	133.08	67.71	69.17	46.33	47.07	44.36	47.59
1984	58.20	95.50	51.30	57.69	79.78	120.79	69.96	71.29	51.28	50.85	48.62	53.13
1985	62.01	98.93	54.54	62.09	82.78	115.15	73.18	76.85	56.22	54.56	53.49	58.24
1986	69.17	103.56	62.74	68.77	85.73	113.03	80.45	79.44	61.94	59.94	58.99	64.14
1987	77.14	97.25	73.46	76.84	90.43	110.64	92.07	82.96	69.08	68.31	67.38	70.31
1988	85.84	105.93	82.38	85.33	93.28	107.35	96.32	87.11	77.11	74.87	76.52	77.74
1989	91.32	104.86	87.97	91.90	97.10	106.32	99.56	92.82	86.83	88.86	87.29	86.31
1990	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE 26 (CONTINUED)

Year	Value Added				Employment				Capital Stock			
	Total	I	II	III	Total	I	II	III	Total	I	II	III
1991	109.13	100.44	110.42	109.54	102.91	94.86	101.42	106.31	114.56	111.74	114.32	115.00
1992	114.66	106.48	114.18	116.58	104.84	92.54	98.01	112.35	127.76	121.12	126.48	129.28
1993	121.25	103.40	121.29	124.46	106.46	87.43	94.12	118.96	141.46	128.33	136.35	146.23
1994	131.66	105.05	132.15	136.04	109.69	83.34	94.98	125.79	157.14	135.60	150.20	163.99
1995	143.42	108.94	145.35	147.93	112.98	78.28	96.65	132.65	175.16	143.61	168.59	182.75
1996	153.55	113.25	156.10	158.56	115.11	75.03	94.46	138.72	194.67	153.06	188.53	202.98
1997	162.05	118.14	164.57	167.60	127.79	73.67	90.31	164.53	211.44	163.11	202.29	221.96
1998	148.50	110.35	151.96	152.74	118.73	76.61	76.51	153.94	213.82	163.31	203.28	225.23
1999	165.56	115.48	184.80	163.85	120.30	72.56	80.66	156.06	222.31	167.88	209.83	235.08
Average Growth Rate (%)												
1911-38	3.7	2.6	9.1	4.2	3.2	3.0	7.2	4.1	2.9	0.6	7.0	4.1
1939-45	7.2	11.6	5.2	-2.4	3.5	2.4	13.2	6.2	2.0	4.2	3.6	0.5
1911-45	4.4	4.7	8.2	2.8	3.1	2.7	8.4	4.4	3.0	1.6	6.8	3.7
1946-52	2.3	2.5	2.4	2.1	6.3	5.2	8.2	9.9	9.8	10.2	10.9	9.4
1939-52	4.4	6.4	3.5	-0.2	4.5	4.0	5.5	6.2	6.4	7.7	7.6	5.5
1953-61	3.2	3.5	10.2	2.1	4.5	3.4	6.2	7.3	6.3	5.5	9.4	5.2
1962-73	8.6	4.7	17.1	8.4	3.8	1.5	10.1	5.6	13.7	13.9	14.6	13.3
1974-99	7.4	1.5	10.2	7.1	2.6	-3.3	2.8	5.6	11.9	9.5	12.5	11.8
1962-99	7.7	2.6	12.3	7.5	3.0	-1.8	5.2	5.6	12.6	11.3	13.2	12.3
1953-99	6.8	2.5	12.0	6.5	3.3	-0.8	5.4	5.9	11.4	10.1	12.5	10.9
1946-99	6.5	2.8	11.0	6.2	3.7	0.0	5.8	6.4	11.1	10.1	12.4	10.7
1911-99	5.6	3.5	9.8	4.8	3.4	1.1	6.1	5.4	8.0	6.8	10.2	8.0

has grown at the rate of 1.5 percent. Therefore, the relative contribution of total factor productivity to value-added in Mining and Manufacturing is 15.3 percent which is of somewhat significant magnitude.

V. Conclusion

In recent years the studies on long-term statistics of Korea such as Mizoguchi and Noshima (1996) and Mizoguchi (1999) have been concerned with how to estimate consistent data for the period of 1939-52 and how to link old national accounts with the new one. The present paper has shown alternative ways of estimating basic data even though the problems inherent in such a work are more than what we normally expect.

TABLE 27

THE AVERAGE ANNUAL GROWTH RATE OF VALUE ADDED, TFI AND TFP IN KOREA: INTERGRATED SERIES (1911-99)

Year	Value Added and Factor Input	Total	I	II	III
1911-45	Total Factor Productivity	1.2	2.0	0.6	-1.3
	Value Added	4.4	4.7	8.2	2.8
	Labor Input	3.1	2.7	8.4	4.4
	Capital Input	3.0	1.6	6.8	3.7
	Total Factor Input	3.2	2.7	7.6	4.1
1946-99	Total Factor Productivity	-0.9	-1.0	2.4	-1.9
	Value Added	6.5	2.8	11.0	6.2
	Labor Input	3.7	0.0	5.8	6.4
	Capital Input	11.1	10.1	12.4	10.7
	Total Factor Input	7.4	3.8	8.6	8.1
1911-99	Total Factor Productivity	-0.3	0.1	1.5	-1.9
	Value Added	5.6	3.5	9.8	4.8
	Labor Input	3.4	1.1	6.1	5.4
	Capital Input	8.0	6.8	10.2	8.0
	Total Factor Input	5.9	3.4	8.3	6.7

A brief survey of the data in the pre-colonial period after the official port opening indicates there was a significant movement toward modernization and industrialization. During the colonial period too, there was a strong industrialization. The result of growth accounting in both pre-war and post-war period confirms our earlier finding that Korean growth was basically input-driven with very few increase in total factor productivity.

If there had been no major structural transformation of industries in Korea, its rapid capital formation would have resulted in declining returns to capital. But at earlier stage of economic development growth can be achieved without the significant contribution of total factor productivity but with the structural transformation of industries. Sonobe and Otsuka (2000) applied a new decomposition approach to growth accounting to the data from prewar Japan. They found that both the resource allocation from the primary to secondary and tertiary sectors and the resource allocation within the manufacturing sector played the critical role in capital deepening in the 1930s.

Therefore, we may conclude that the rapid growth episode of the

Korean economy during 1911-99 is mainly the consequence of inter-industry transformation until the turning point around 1975 and intra-industry transformation within manufacturing after 1975.

However, when the intra-industry transformation within manufacturing began to lose reallocative efficiency around 1995 and the rates of return to capital began to fall suddenly with decreasing returns as observed in Pyo and Nam (1999), the Korean economy had to face with the real sector crisis before the financial crisis of December 1997.

Appendix

TABLE A-1

AGRICULTURE, FORESTRY, AND FISHING IN KOREA (1929-42)

Year	Total Agricultural Products (Unit: Won)	Forest Products (Unit: Yen)	Fishery (Unit: Yen)
1929	964,280,603	74,438,000	66,114,052
1930	724,227,875	63,360,000	65,338,398
1931	702,885,790	59,413,000	50,129,028
1932	831,816,201	55,063,000	46,578,170
1933	920,841,950	94,329,973	51,378,158
1934	1,020,147,882	106,030,628	57,777,901
1935	1,147,055,168	114,005,342	65,966,614
1936	1,208,911,166	118,064,757	79,879,137
1937	1,560,487,464	138,709,411	89,920,363
1938	1,574,787,630	156,749,365	87,082,880
1939	1,644,413,372	192,603,975	151,098,000
1940	2,052,562,212	236,673,893	175,498,949
1941	2,340,313,973	344,255,945	166,750,671
1942	1,899,449,435	389,965,149	162,066,840

Sources: Chosun Statistical Yearbook (1935, 1942)

TABLE A-2

MINING PRODUCTS IN KOREA (1925-43)

Year	Silver (g)	Copper (g)	Molybdenum (MT)	Iron (MT)	Coal (MT)
1925	1,503	423	484	351,444	622,304
1926	1,507	778	1,957	351,575	682,896
1927	1,600	1,004	824	483,996	709,578
1928	1,744	607	718	504,375	815,817
1929	1,702	546	332	551,814	937,902
1930	2,101	589	129	532,497	884,138
1931	11,404	698	97	164,712	936,382
1932	18,351	693	492	151,413	1,104,194
1933	21,864	784	783	258,267	1,306,734
1934	31,287	1,434	1,805	176,008	1,688,647
1935	39,345	2,161	1,728	228,220	1,949,153
1936	58,820	3,636	2,737	234,400	2,281,933
1937	75,768	4,899	6,400	204,821	2,431,405
1938	88,169	5,828	2,962	768,000	3,419,351
1939	115,680	10,539	7,765	850,000	4,238,694
1940	113,885	12,944	7,630	1,185,426	5,740,941
1941	109,808	3,499	7,819	1,363,404	6,157,729
1942	106,173	4,759	9,521	1,898,352	6,846,691
1943	88,000	4,554	23,020	2,364,270	6,587,593

Sources: Chosun Statistical Yearbook (1935, 1942)

TABLE A-3

SERVICE SECTOR IN KOREA (1929-42)

(Unit: 1,000Won)

Year	State-Owned Railroads Profits	Bank Services Profits	Insurance Profits
1929	14,117	6,413	3,119
1930	9,966	6,280	5,957
1931	9,061	6,209	5,508
1932	12,129	6,210	6,225
1933	16,907	5,983	7,857
1934	21,612	6,291	9,145
1935	24,482	6,575	11,372
1936	27,914	7,154	12,508
1937	32,103	7,708	14,444
1938	42,755	8,524	17,869
1939	50,955	11,163	23,425
1940	57,905	14,135	30,689
1941	44,347	19,444	31,880
1942	83,527	23,068	42,622

Sources: Chosun Statistical Yearbook (1935, 1942)

TABLE A-4

EXPORT AND IMPORT IN KOREA (1936-45)

Year	Total Food Consumption (Unit: *Suk*)	Exports (Unit: 1,000Won)	Imports (Unit: 1,000Won)
1936	27,065,119	589,356	743,993
1937	33,156,519	673,584	830,818
1938	34,833,058	875,214	1,026,216
1939	37,804,385	1,000,981	1,349,308
1940	32,739,173	929,646	1,498,762
1941	34,599,035	965,569	1,505,281
1942	37,270,267	943,871	1,489,908
1943	28,384,041	705,007	1,345,459
1944	32,644,445	919,602	955,895
1945	27,153,914	70,898	122,169

Source: National Statistical Office (1994)

TABLE A-5

AGRICULTURAL PRODUCTION DATA IN KOREA (1946-61)

(Unit: Ton)

Year	Rice	Barley	Miscellaneous Grain	Potatoes	Fruits
1946	1,735,256	552,458	78,668	485,879	73,757
1947	1,994,400	497,346	61,084	511,572	51,471
1948	2,229,943	523,983	82,204	560,541	103,125
1949	2,121,657	676,862	119,423	612,860	113,189
1950	2,103,464	699,445	73,634	532,074	82,565
1951	1,634,292	407,537	98,358	469,164	181,675
1952	1,336,834	584,537	157,949	339,483	127,627
1953	2,035,580	689,910	85,228	160,920	108,447
1954	2,160,398	870,130	85,582	179,756	109,939
1955	2,234,189	726,254	91,545	168,498	116,852
1956	1,840,460	771,716	81,442	172,815	117,014
1957	2,266,226	684,604	81,806	172,743	127,255
1958	2,389,649	836,604	108,470	174,993	151,323
1959	2,390,755	963,328	86,113	158,028	166,818
1960	2,296,724	962,291	80,739	150,380	166,371
1961	2,722,013	1,043,548	96,368	190,097	150,698

Sources: Bureau of Statistics (1957, 1962)

TABLE A-6

MINING PRODUCTS IN KOREA (1946-61)

(Unit: MT)

Year	Silver	Copper	Gold	Tungsten	Talc
1946	857	6,183	38	376	300
1947	207	2,133	223	1,199	700
1948	935	1,050	108	1,339	72
1949	635	5,160	170	1,376	7,723
1950	316	4,000	462	807	7,485
1951	168	1,066	237	1,104	1,888
1952	354	9,819	580	3,790	3,764
1953	1,624	11,137	494	7,441	8,599
1954	1,563	7,047	1,628	3,828	8,326
1955	2,476	12,047	1,483	3,146	6,201
1956	6,109	14,708	1,552	3,742	6,267
1957	8,626	9,168	2,071	3,825	6,600
1958	7,707	7,645	2,242	3,012	10,106
1959	7,524	4,798	2,043	2,924	16,643
1960	10,253	5,892	2,047	4,915	15,979
1961	14,321	5,300	2,616	6,304	21,674

TABLE A-6 (CONTINUED)

Year	Pottery and Porcelain (1,000Each)	Cement (MT)	Nails (MT)	Trans-formers (Each)	Light Bulbs (1,000Each)	Cigar (MT)	Cut Tobacco (MT)
1946	5,000	10,696	285	2,645	2,275	1,713	1,991
1947	5,350	8,191	1,705	2,875	3,719	3,364	5,518
1948	7,512	17,350	1,697	2,474	3,374	3,983	7,168
1949	20,936	24,132	2,466	1,080	1,889	6,031	7,613
1950	7,708	410,144	836	205	869	2,260	2,966
1951	13,700	7,319	642	1,415	806	7,047	4,426
1952	17,900	36,224	1,624	1,348	693	10,003	7,481
1953	22,400	43,796	5,740	1,499	1,585	10,979	4,481
1954	32,400	62,235	5,000	1,442	1,933	14,111	7,354
1955	34,280	56,257	5,031	841	1,037	12,605	6,178
1956	30,488	46,564	6,201	1,319	2,716	12,848	5,576
1957	30,275	91,977	6,844	709	3,268	13,136	6,124
1958	25,310	295,652	7,526	1,918	3,196	13,933	7,414
1959	37,500	357,856	8,430	4,405	3,564	14,537	7,150
1960	34,481	430,857	7,474	3,066	2,194	14,382	6,796
1961	35,545	522,832	5,353	4,634	-	15,423	7,955

Sources: Bureau of Statistics (1957, 1962)

TABLE A-7

POPULATION BY INDUSTRIES

(Unit: Thousand Person(%))

Year	Total	I	II	III
1956	7,829(100)	6,131(78.3)	150(1.9)	1,546(19.8)
1959	9,251(100)	6,319(68.3)	170(1.8)	2,763(29.9)
1962	11,523(100)	8,252(71.6)	341(3.0)	2,930(25.4)

Sources: Bureau of Statistics (1957, 1960, 1963)

TABLE A-8

SUMMARY TABLE OF ECONOMICALLY ACTIVE POPULATION

Year	Census Population	Midyear Population	15years and over	Economically Population	Employed	Unemployed	Non-Economically Active Population
1945	16,873						
1946	19,369						
1947	19,886						
1948	20,027						
1949	20,189						
1950							
1951							
1952	20,527						
1953	21,546						
1954							
1955	21,526						
1956	20,724						
1957	21,321						
1958	21,910						
1959	22,974						
1960	24,989	25,012					
1961		25,766					
1962		26,513					
1963		27,262	14,551	8,230	7,563	667	6,321
1964		27,984	14,968	8,341	7,698	643	6,627
1965		28,705	15,367	8,754	8,112	642	6,613
1966	29,160	29,436	15,753	8,957	8,325	632	6,796
1967		30,131	16,121	9,180	8,624	556	6,941
1968		30,838	16,456	9,541	9,061	480	6,915
1969		31,544	16,852	9,747	9,285	462	7,105
1970	31,466	32,241	17,469	10,062	9,617	445	7,407
1971		32,883	18,118	10,407	9,946	461	7,711
1972		33,505	18,819	10,865	10,379	486	7,954
1973		34,103	19,490	11,389	10,942	447	8,101
1974		34,692	20,187	11,900	11,421	479	8,287
1975	34,707	35,281	20,919	12,193	11,692	501	8,726
1976		35,849	21,629	12,911	12,412	499	8,718
1977		36,412	22,406	13,316	12,812	504	9,090
1978		36,969	23,130	13,849	13,412	437	9,281
1979		37,534	23,788	14,142	13,602	540	9,646
1980	37,436	38,124	24,463	14,431	13,683	748	10,032

TABLE A-8 (CONTINUED)

Year	Census Population	Midyear Population	15years and over	Economically Population	Employed	Unemployed	Non-Economically Active Population
1981		38,723	25,100	14,683	14,023	660	10,417
1982		39,326	25,637	15,032	14,379	653	10,605
1983		39,910	26,212	15,118	14,505	613	11,094
1984		40,406	26,862	14,997	14,429	568	11,865
1985	40,448	40,806	27,553	15,592	14,970	622	11,961
1986		41,214	28,225	16,116	15,505	611	12,109
1987		41,622	28,955	16,873	16,354	519	12,082
1988		42,031	29,603	17,305	16,869	436	12,298
1989		42,449	30,265	18,023	17,560	463	12,242
1990	43,411	42,869	30,887	18,539	18,085	454	12,348
1991		43,268	31,422	19,048	18,612	436	12,374
1992		43,663	31,898	19,426	18,961	465	12,472
1993		44,056	32,400	19,803	19,253	550	12,597
1994		44,453	32,940	20,326	19,837	489	12,614
1995	44,609	45,093	33,664	20,853	20,432	421	12,811
1996		45,545	34,285	21,243	20,817	426	13,043
1997		45,991	34,842	21,662	21,106	556	13,180
1998		46,430	35,362	21,456	19,994	1,461	13,906
1999		46,858	35,765	21,634	20,281	1,353	14,131

Sources: National Statistical Office (1995c)
The Bank of Korea (Selected Years)

TABLE A-9

CAPITAL STOCK (MIZOGUCHI) IN KOREA (1911-45)

(Unit: 1,000Yen at 1934-6 Constant Prices)

Year	Capital Stock			
	Total	I	II	III
1911	601,326	134,001	74,173	393,152
1912	605,381	133,999	74,258	397,124
1913	605,428	134,000	73,714	397,714
1914	603,975	134,000	72,391	397,584
1915	598,706	133,999	70,511	394,196
1916	597,187	134,001	69,486	393,700
1917	612,039	134,001	73,767	404,271
1918	882,429	370,364	87,290	424,775
1919	938,793	377,434	104,262	457,097
1920	982,862	383,494	115,886	483,482
1921	1,027,076	387,535	126,334	513,207
1922	944,574	256,566	137,693	550,315
1923	988,929	259,596	146,854	582,479
1924	1,012,437	259,596	153,887	598,954
1925	1,052,431	259,595	164,056	628,780
1926	1,089,772	263,636	172,497	653,639
1927	1,289,920	401,685	186,297	701,938
1928	1,367,031	401,480	205,065	760,486
1929	1,445,573	398,518	225,195	821,860
1930	1,506,151	403,725	236,310	866,116
1931	1,518,954	395,749	238,341	884,864
1932	1,567,846	411,459	243,549	912,838
1933	1,615,954	417,556	253,834	944,564
1934	1,694,553	411,261	275,384	1,007,908
1935	1,834,253	413,695	312,787	1,107,771
1936	2,066,237	422,783	375,872	1,267,582
1937	2,321,314	431,512	434,849	1,454,953
1938	2,677,536	426,371	522,332	1,718,833
1939	2,850,697	491,594	423,377	1,935,726
1940	3,001,648	520,355	527,910	1,953,383
1941	3,175,807	576,042	553,946	2,045,819
1942	3,004,157	616,198	560,823	1,827,136
1943	2,862,747	617,453	547,108	1,698,186
1944	2,827,241	625,246	546,891	1,655,105
1945	2,791,736	633,038	546,675	1,612,023
	Average Growth Rate (%)			
1911-24	4.1	5.2	5.8	3.3
1925-38	7.4	3.9	9.3	8.0
1911-38	5.7	4.4	7.5	5.6
1939-45	-0.3	4.3	4.4	-3.0
1925-45	5.0	4.6	6.2	4.8
1911-45	4.6	4.7	6.1	4.2

Notes: 1) Data for 1911-38 are from Mizoguchi and Umemura (1988, Table 52)

2) Data for 1939-45 are my own estimates.

TABLE A-10

CAPITAL STOCK (MIZOGUCHI) IN SOUTH KOREA (1911-45)

(Unit: 1,000Yen in 1934-6 Constant Prices)

Year	Capital Stock			
	Total	I	II	III
1911	383,659	86,833	48,064	254,763
1912	392,287	86,831	48,119	257,337
1913	392,317	86,832	47,767	257,719
1914	396,812	88,038	47,561	261,212
1915	413,107	92,459	48,653	271,995
1916	409,670	91,925	47,667	270,078
1917	423,531	92,729	51,047	279,756
1918	607,994	255,181	60,143	292,670
1919	645,890	259,675	71,732	314,483
1920	683,089	266,528	80,541	336,020
1921	718,953	271,275	88,434	359,245
1922	658,368	178,827	95,972	383,569
1923	672,472	176,525	99,861	396,085
1924	674,283	172,891	102,489	398,903
1925	704,076	173,669	109,754	420,654
1926	745,404	180,327	117,988	447,089
1927	873,276	271,941	126,123	475,212
1928	894,038	262,568	134,112	497,358
1929	929,503	256,247	144,801	528,456
1930	1,033,220	276,955	162,108	594,156
1931	961,498	250,509	150,870	560,119
1932	1,000,286	262,511	155,384	582,391
1933	1,003,507	259,302	157,631	586,574
1934	1,055,707	256,216	171,564	627,927
1935	995,999	224,636	169,843	601,520
1936	1,084,774	221,961	197,333	665,481
1937	1,132,801	210,578	212,206	710,017
1938	1,256,409	200,821	246,019	809,570
1939	1,274,261	219,742	189,246	865,269
1940	1,362,748	236,241	239,671	886,836
1941	1,441,816	261,523	251,492	928,802
1942	1,363,887	279,754	254,614	829,520
1943	1,299,687	280,324	248,387	770,976
1944	1,283,558	283,861	248,289	751,417
1945	1,267,448	287,399	248,190	731,858
	Average Growth Rate (%)			
1911-24	4.3	5.4	6.0	3.5
1925-38	4.6	1.1	6.4	5.2
1911-38	4.4	3.2	6.2	4.4
1939-45	-0.1	4.6	4.6	-2.8
1925-45	3.0	2.6	4.2	2.8
1911-45	3.5	3.6	4.9	3.2

Notes: 1) Data for 1911-38 are estimated using Mizoguchi and Umemura (1988, Table 52)

2) Data for 1939-45 are my own estimates.

TABLE A-11

ESTIMATED SHARE OF LABOR INCOME IN KOREA (1911-45)

Year	Share of Labor Income			
	Total	I	II	III
1911	0.635	0.7	0.5	0.6
1912	0.636	0.7	0.5	0.6
1913	0.636	0.7	0.5	0.6
1914	0.637	0.7	0.5	0.6
1915	0.631	0.7	0.5	0.6
1916	0.632	0.7	0.5	0.6
1917	0.634	0.7	0.5	0.6
1918	0.633	0.7	0.5	0.6
1919	0.629	0.7	0.5	0.6
1920	0.634	0.7	0.5	0.6
1921	0.659	0.7	0.5	0.6
1922	0.632	0.7	0.5	0.6
1923	0.631	0.7	0.5	0.6
1924	0.631	0.7	0.5	0.6
1925	0.629	0.7	0.5	0.6
1926	0.626	0.7	0.5	0.6
1927	0.627	0.7	0.5	0.6
1928	0.624	0.7	0.5	0.6
1929	0.623	0.7	0.5	0.6
1930	0.625	0.7	0.5	0.6
1931	0.622	0.7	0.5	0.6
1932	0.622	0.7	0.5	0.6
1933	0.619	0.7	0.5	0.6
1934	0.614	0.7	0.5	0.6
1935	0.611	0.7	0.5	0.6
1936	0.605	0.7	0.5	0.6
1937	0.608	0.7	0.5	0.6
1938	0.608	0.7	0.5	0.6
1939	0.631	0.7	0.5	0.6
1940	0.634	0.7	0.5	0.6
1941	0.644	0.7	0.5	0.6
1942	0.650	0.7	0.5	0.6
1943	0.650	0.7	0.5	0.6
1944	0.650	0.7	0.5	0.6
1945	0.650	0.7	0.5	0.6

TABLE A-12

TOTAL FACOR INPUT IN KOREA

(Unit: 1,000Yen in 1936 Constant Prices)

Year	Total Factor Input			
	Total	I	II	III
1911	2,915,499	2,670,001	44,435	407,784
1912	3,064,874	2,810,909	45,288	423,212
1913	4,293,868	4,028,898	54,288	527,647
1914	4,955,923	4,741,357	59,172	531,315
1915	7,140,525	7,070,723	73,865	632,516
1916	6,543,361	6,410,391	114,650	574,309
1917	6,897,368	6,694,129	116,021	641,831
1918	7,045,923	6,830,367	109,341	684,118
1919	7,183,025	7,002,608	119,775	696,633
1920	6,477,299	6,336,930	99,036	569,219
1921	6,855,039	6,418,159	108,067	628,745
1922	6,725,999	6,487,113	121,404	684,156
1923	6,792,910	6,520,253	126,049	728,240
1924	6,842,564	6,538,729	131,270	756,259
1925	7,213,459	6,853,304	142,948	843,300
1926	6,613,899	6,892,243	151,385	265,317
1927	7,259,589	6,842,817	155,359	899,065
1928	7,093,606	6,681,768	156,718	909,979
1929	7,107,970	6,656,666	168,090	955,408
1930	7,359,325	6,783,937	187,513	1,049,196
1931	7,158,377	6,527,617	195,833	1,103,983
1932	6,477,427	5,844,859	173,802	1,055,833
1933	6,189,257	5,604,490	177,548	1,003,051
1934	6,301,186	5,678,059	197,236	1,068,686
1935	6,572,821	5,938,240	218,377	1,118,704
1936	6,511,603	5,829,787	240,002	1,174,217
1937	6,540,242	5,828,554	240,373	1,172,117
1938	6,582,380	5,803,100	278,058	1,192,631
1939	6,778,013	5,702,543	319,306	1,245,666
1940	6,907,572	5,644,712	371,384	1,348,452
1941	7,279,760	5,812,512	429,998	1,398,593
1942	7,620,851	5,891,511	479,836	1,537,340
1943	7,756,071	6,033,256	517,797	1,490,947
1944	8,091,929	6,312,301	536,122	1,539,439
1945	8,427,788	6,591,346	554,446	1,587,931
	Average Growth Rate (%)			
1911-24	6.8	7.1	8.7	4.9
1925-38	-0.7	-1.3	5.3	2.7
1911-38	3.1	2.9	7.0	4.1
1939-45	3.7	2.4	9.6	4.1
1925-45	0.8	-0.2	7.0	3.2
1911-45	3.2	2.7	7.7	4.1

TABLE A-13

TOTAL FACOR INPUT IN SOUTH KOREA

(Unit: 1,000 Yen in 1936 Constant Prices)

Year	Total Factor Input			
	Total	I	II	III
1911	1,937,069	1,776,256	29,241	269,387
1912	2,025,339	1,859,288	29,714	278,461
1913	2,826,734	2,653,796	35,557	346,345
1914	3,256,042	3,115,072	38,876	349,074
1915	4,707,251	4,656,110	49,298	420,398
1916	4,312,429	4,220,768	75,931	381,359
1917	4,540,772	4,402,005	76,819	425,982
1918	4,623,831	4,477,668	72,163	452,158
1919	4,727,472	4,604,223	79,230	461,433
1920	4,327,652	4,229,953	66,487	383,000
1921	4,554,552	4,259,541	72,466	421,815
1922	4,448,432	4,284,342	81,134	457,031
1923	4,488,648	4,304,925	83,818	483,839
1924	4,517,716	4,316,028	86,832	500,113
1925	4,756,501	4,517,106	94,549	557,475
1926	4,366,385	4,543,966	100,841	179,712
1927	4,777,257	4,498,141	103,087	594,933
1928	4,652,595	4,382,999	102,693	596,496
1929	4,650,468	4,358,682	109,269	622,802
1930	4,828,121	4,440,571	125,266	695,038
1931	4,670,795	4,266,569	126,043	715,539
1932	4,221,969	3,814,841	112,049	684,832
1933	4,019,229	3,650,244	112,836	644,538
1934	4,086,452	3,692,962	125,423	686,505
1935	4,221,646	3,858,205	129,845	691,868
1936	4,158,165	3,779,210	139,956	716,752
1937	4,145,809	3,761,890	137,076	702,690
1938	4,157,803	3,737,769	159,924	709,421
1939	4,546,919	3,643,385	178,957	724,578
1940	4,539,239	3,556,137	206,168	776,934
1941	4,693,651	3,642,747	242,681	808,223
1942	4,865,691	3,690,530	273,611	901,550
1943	4,953,254	3,780,046	297,832	875,376
1944	5,171,890	3,955,986	309,121	906,783
1945	5,390,526	4,131,926	320,410	938,190
	Average Growth Rate (%)			
1911-24	6.7	7.1	8.7	4.9
1925-38	-1.0	-1.4	4.1	1.9
1911-38	2.9	2.8	6.5	3.7
1939-45	2.9	2.1	10.2	4.4
1925-45	0.6	-0.4	6.3	2.6
1911-45	3.1	2.5	7.3	3.7

TABLE A-14

SHARE OF LABOR INCOME (1946-99) IN SOUTH KOREA

Year	Share of Labor Income			
	Total	I	II	III
1946	0.294	0.465	0.513	0.405
1947	0.294	0.465	0.513	0.405
1948	0.294	0.465	0.513	0.405
1949	0.294	0.465	0.513	0.405
1950	0.294	0.465	0.513	0.405
1951	0.294	0.465	0.513	0.405
1952	0.294	0.465	0.513	0.405
1953	0.294	0.465	0.513	0.405
1954	0.353	0.465	0.513	0.405
1955	0.321	0.465	0.513	0.405
1956	0.300	0.465	0.513	0.405
1957	0.316	0.465	0.513	0.405
1958	0.354	0.465	0.513	0.405
1959	0.397	0.465	0.513	0.405
1960	0.382	0.465	0.513	0.405
1961	0.354	0.465	0.505	0.393
1962	0.363	0.465	0.497	0.381
1963	0.304	0.445	0.504	0.429
1964	0.278	0.448	0.497	0.416
1965	0.310	0.453	0.489	0.405
1966	0.319	0.452	0.498	0.392
1967	0.353	0.456	0.490	0.383
1968	0.351	0.479	0.483	0.376
1969	0.359	0.490	0.475	0.371
1970	0.300	0.520	0.497	0.393
1971	0.298	0.523	0.495	0.391
1972	0.291	0.502	0.515	0.397
1973	0.306	0.508	0.512	0.396
1974	0.292	0.539	0.504	0.399
1975	0.295	0.506	0.504	0.392
1976	0.300	0.472	0.508	0.381
1977	0.320	0.418	0.535	0.397
1978	0.349	0.429	0.567	0.421
1979	0.365	0.460	0.573	0.424
1980	0.375	0.513	0.560	0.405

TABLE A-14 (CONTINUED)

Year	Share of Labor Income			
	Total	I	II	III
1981	0.369	0.486	0.528	0.399
1982	0.375	0.479	0.523	0.400
1983	0.391	0.468	0.529	0.416
1984	0.389	0.467	0.531	0.402
1985	0.382	0.477	0.590	0.415
1986	0.374	0.504	0.559	0.395
1987	0.388	0.505	0.552	0.402
1988	0.403	0.461	0.610	0.417
1989	0.425	0.480	0.602	0.442
1990	0.442	0.470	0.495	0.438
1991	0.453	0.446	0.448	0.459
1992	0.443	0.460	0.455	0.456
1993	0.430	0.463	0.431	0.451
1994	0.419	0.452	0.378	0.450
1995	0.416	0.419	0.358	0.458
1996	0.429	0.414	0.337	0.469
1997	0.420	0.405	0.330	0.459
1998	0.410	0.396	0.322	0.448
1999	0.400	0.386	0.314	0.437

TABLE A-15

INDEX OF TOTAL FACTOR INPUT (1946-99) IN SOUTH KOREA

Year	Total Factor Input			
	Total	I	II	III
1946	6.3	33.6	2.4	3.3
1947	6.7	35.8	2.6	3.7
1948	7.2	38.0	2.9	4.0
1949	7.7	40.2	3.2	4.4
1950	8.1	42.0	3.4	4.8
1951	8.6	43.8	3.6	5.2
1952	9.0	45.5	3.9	5.6
1953	9.7	48.4	4.3	6.1
1954	11.8	49.9	4.5	6.5
1955	11.3	51.4	4.8	6.9
1956	10.6	50.1	4.9	7.1
1957	11.7	52.3	5.3	7.6
1958	13.5	54.0	5.6	8.2
1959	15.7	56.4	6.0	8.8
1960	16.8	61.8	6.8	9.9
1961	16.4	63.3	7.1	10.2
1962	17.8	65.1	7.6	10.9
1963	16.5	64.4	8.6	12.8
1964	15.7	60.5	9.0	13.3
1965	18.8	62.8	11.2	15.0
1966	20.1	63.5	12.1	15.5
1967	22.9	64.5	14.3	16.5
1968	24.7	67.5	16.5	18.6
1969	25.8	74.6	17.3	19.2
1970	22.6	75.8	17.3	20.3
1971	23.9	76.6	18.1	22.4
1972	25.1	84.9	19.8	22.9
1973	26.4	88.9	21.9	22.8
1974	28.1	101.2	25.7	24.8
1975	30.0	92.7	28.6	26.7
1976	33.2	94.9	36.0	27.9
1977	38.7	81.8	45.0	32.8
1978	44.6	86.3	50.5	38.7
1979	49.5	88.5	55.4	43.7
1980	50.8	92.5	51.4	46.0

TABLE A-15 (CONTINUED)

Year	Total Factor Input			
	Total	I	II	III
1981	53.5	94.9	50.4	49.4
1982	57.4	94.0	53.5	54.4
1983	61.1	86.0	57.6	59.2
1984	63.9	82.2	60.7	63.2
1985	67.2	82.3	64.5	68.2
1986	71.5	84.2	71.2	71.9
1987	78.3	88.4	80.5	77.4
1988	84.4	89.8	89.1	83.0
1989	91.5	98.4	93.4	90.1
1990	100.0	100.0	100.0	100.0
1991	111.1	104.2	109.0	113.7
1992	121.3	108.0	116.3	126.5
1993	130.8	109.4	121.2	139.8
1994	141.3	112.0	131.4	152.1
1995	153.9	117.0	144.7	166.1
1996	164.2	121.4	158.3	177.4
1997	180.3	127.5	166.5	200.9
1998	178.4	129.7	163.0	198.1
1999	185.1	131.7	169.7	205.3
	Average Growth Rate (%)			
1946-52	6.1	5.2	8.4	9.2
1953-61	6.8	3.4	6.5	6.6
1962-73	3.6	2.9	10.1	6.9
1974-99	7.8	1.1	7.8	8.8
1962-99	6.5	1.9	8.8	8.3
1953-99	6.6	2.2	8.3	7.9
1946-99	6.6	2.6	8.4	8.1

Sources: Mizoguchi (1988), Pyo (1996), National Statistical Office (1995c), and Bank of Korea (1955)

TABLE A-16

INDEX OF TOTAL FACTOR INPUT IN KOREA (1911-99)

Year	Total Factor Input			
	Total	I	II	III
1911	1.20	6.88	0.15	0.69
1912	1.26	7.24	0.15	0.72
1913	1.77	10.38	0.18	0.89
1914	2.05	12.22	0.19	0.90
1915	2.95	18.22	0.24	1.07
1916	2.70	16.52	0.37	0.97
1917	2.85	17.25	0.38	1.09
1918	2.91	17.60	0.36	1.16
1919	2.96	18.04	0.39	1.18
1920	2.67	16.33	0.32	0.96
1921	2.83	16.54	0.35	1.06
1922	2.78	16.71	0.40	1.16
1923	2.80	16.80	0.41	1.23
1924	2.82	16.85	0.43	1.28
1925	2.98	17.66	0.47	1.43
1926	2.73	17.76	0.49	0.45
1927	3.00	17.63	0.51	1.52
1928	2.93	17.22	0.51	1.54
1929	2.93	17.15	0.55	1.62
1930	3.04	17.48	0.61	1.78
1931	2.95	16.82	0.64	1.87
1932	2.67	15.06	0.57	1.79
1933	2.55	14.44	0.58	1.70
1934	2.60	14.63	0.64	1.81
1935	2.71	15.30	0.71	1.89
1936	2.69	15.02	0.78	1.99
1937	2.70	15.02	0.79	1.98
1938	2.72	14.95	0.91	2.02
1939	2.80	14.69	1.04	2.11
1940	2.85	14.54	1.21	2.28
1941	3.00	14.98	1.40	2.37
1942	3.14	15.18	1.57	2.60
1943	3.20	15.54	1.69	2.52
1944	3.34	16.26	1.75	2.60
1945	3.48	16.98	1.81	2.69
1946	4.23	18.61	2.18	3.31
1947	4.93	21.78	2.55	3.85
1948	5.18	22.70	2.69	4.04
1949	5.45	23.74	2.83	4.25
1950	5.65	24.48	2.91	4.44

TABLE A-16 (CONTINUED)

Year	Total Factor Input			
	Total	I	II	III
1951	5.86	25.23	3.03	4.61
1952	6.07	25.97	3.12	4.79
1953	7.41	32.21	3.86	5.78
1954	8.61	32.19	3.89	5.82
1955	8.05	32.19	3.93	5.87
1956	6.73	27.45	3.46	5.23
1957	7.85	31.11	3.92	5.85
1958	9.49	34.71	4.37	6.45
1959	12.20	41.17	5.13	7.46
1960	15.08	53.34	6.52	9.33
1961	15.36	57.95	7.01	9.88
1962	17.28	62.54	7.72	10.61
1963	16.53	64.44	8.75	12.76
1964	15.71	60.45	9.16	13.25
1965	18.78	62.79	11.44	14.93
1966	20.12	63.50	12.37	15.47
1967	22.90	64.52	14.56	16.48
1968	24.74	67.55	16.77	18.55
1969	25.81	74.62	17.63	19.22
1970	22.65	75.78	17.63	20.31
1971	23.86	76.59	18.54	22.37
1972	25.07	84.92	20.29	22.80
1973	26.36	88.91	22.47	22.65
1974	28.11	101.16	26.24	24.68
1975	29.99	92.71	29.14	26.59
1976	33.16	94.91	36.56	27.88
1977	38.69	81.80	45.67	32.38
1978	44.64	86.34	51.18	38.25
1979	49.53	88.52	56.35	42.96
1980	50.80	92.53	52.65	45.11
1981	53.46	94.95	52.02	48.30
1982	57.43	93.99	55.47	53.17
1983	61.12	85.96	59.97	57.92
1984	63.95	82.25	63.19	61.89
1985	67.17	82.25	66.75	66.89
1986	71.52	84.16	73.30	70.84
1987	78.25	88.45	82.14	76.52
1988	84.40	89.84	89.91	82.49
1989	91.54	98.38	93.83	89.75
1990	100.00	100.00	100.00	100.00

TABLE A-16 (CONTINUED)

Year	Total Factor Input			
	Total	I	II	III
1991	111.15	104.22	109.32	113.65
1992	121.26	107.97	117.44	126.07
1993	130.82	109.41	123.02	139.51
1994	141.28	111.98	133.47	151.97
1995	153.85	116.99	146.71	166.06
1996	164.17	121.42	160.29	177.41
1997	180.28	127.52	166.45	200.88
1998	178.44	129.68	162.96	198.10
1999	185.07	131.71	169.74	205.29
	Average Growth Rate (%)			
1911-38	3.1	2.9	6.9	4.1
1939-45	3.7	2.4	9.7	4.1
1911-45	3.2	2.7	7.6	4.1
1946-52	6.2	5.7	6.2	6.4
1939-52	6.1	4.5	8.8	6.5
1953-61	9.5	7.6	7.7	6.9
1962-73	3.9	3.3	10.2	7.1
1974-96	7.8	1.1	7.8	8.8
1962-96	6.6	2.0	8.7	8.3
1953-96	7.2	3.1	8.6	8.1
1946-96	7.4	3.8	8.6	8.1
1911-96	5.9	3.4	8.3	6.7

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