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ECONOMIC INTELLIGENCE REPORT

A PRELIMINARY ESTIMATE OF THE GROSS NATIONAL PRODUCT OF NORTH KOREA 1949 AND 1954-56



CIA/RR 59-3

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CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

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A PRELIMINARY ESTIMATE OF THE GROSS NATIONAL PRODUCT
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A PRELIMINARY ESTIMATE OF THE GROSS NATIONAL PRODUCT
OF NORTH KOREA*
1949 AND 1954-56

Summary

The gross national product (GNP) of North Korea in 1956 is estimated to have been about 115 billion current won** (US \$958 million) and per capita GNP about 14,258 won (US \$119). Real GNP in prewar prices*** was 26 percent larger in 1956 than in 1949.

During the Three Year Plan (1954-56) the domestic product of North Korea averaged about 81 percent of available current resources (GNP plus Sino-Soviet Bloc aid). In South Korea, by comparison, the domestic product furnished an average of 88 percent of available resources in the 2 years 1955 and 1956, while in Communist China it accounted for nearly all the available resources during 1955 and 1956.

A comparison between North and South Korea on a year-to-year basis, however, shows that although the degree of North Korea's dependence on

* The estimates and conclusions in this report represent the best judgment of this Office as of 15 November 1958.

** Except where otherwise indicated, won values in this report are expressed in current won. North Korea has not announced an official exchange rate. The above North Korean figure was converted into a US dollar equivalent on the basis of a nominal exchange rate of 120 won to US \$1. This rate was derived from the following cross rates: 30 won equal 1 ruble; 4 rubles equal US \$1. This exchange value of the won and the ruble was first revealed by a Bulgarian periodical published in 1954 and was substantiated by a publication of the Ministry of Railroads of Communist China in 1955, which contained passenger rates for trains traveling to North Korea expressed in rubles and won at the rate of 30 won to 1 ruble.

Although there are considerable variations among reports concerning the exchange rate of the won, reflecting the existence of many exchange rates that vary from transaction to transaction, the above derived rate is currently used by the intelligence community because it represents the first known post-Korean War report of a won exchange rate obtained from published Communist sources. 1/ [redacted] 50X1

[redacted] This rate is used in the present report, for 50X1 lack of anything better, for all conversions of North Korean value figures. In view of the above limitations, all dollar equivalents contained herein should be regarded only as rough approximations.

*** The term prewar in this report, unless otherwise specified, refers to 1949; postwar, to 1954-56; interwar period, to 1946-49; and preliberation period, to the years before August 1945.

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external resources in 1955 apparently exceeded that of South Korea, this position was reversed slightly in 1956. By the end of its Three Year Plan, North Korea had supplied about 88 percent of its total domestic requirements from its GNP as against 80 percent in 1955. In comparison, the proportion of domestic requirements met by the GNP in South Korea declined from 89 percent in 1955 to 87 percent in 1956.

During the 3-year period 1954-56, Sino-Soviet Bloc aid averaged roughly one-fourth of gross national expenditures in North Korea, or nearly one-fifth of the total available resources, thus confirming the commonly accepted belief that the North Korean economy has relied heavily on external resources. At the same time, however, quantitative data reveal the less obvious fact that the GNP has increased in real terms at the same time that the external economic supports have declined -- a fact which indicates that North Korea's self-generated economic strength had grown substantially by the end of the Three Year Plan and also (in the light of achievements since the completion of the Three Year Plan) that North Korea is gaining indigenous economic strength at a fairly rapid rate. The above findings also indicate that North Korea is possibly ahead of South Korea* in its postwar economic recovery and development. This indication is corroborated by the fact that during the Three Year Plan period the real GNP increased at an annual rate of 18 percent compared with 17 percent in South Korea during the comparable period. Although the extent of war devastation in North Korea was as great as if not greater than that in South Korea, the existence of basic natural resources which are necessary for industrial development, coupled with the adamant industry-first policy of the P'yongyang regime, undoubtedly helped to accelerate the postwar economic comeback of North Korea, a recovery which is reflected in the high growth rate of its GNP.

North Korea has allocated a much larger part of its available resources to productive ends than have its neighbors, South Korea and Communist China. Evidently this allocation was made at the expense of consumers and their material comforts. The proportion of total available resources consumed as end products and services dropped from 72 percent in the prewar period to 62 percent in the postwar period. Although the absolute level of real consumption in aggregate terms has dropped from the prewar level, the real per capita consumption has increased because of a rise in per capita productivity concurrent with a

* A direct comparison of the relative level of GNP in North and South Korea would be a useful but impossible task at present, largely because different monetary units have been in use since about 1948 in these two areas, thus precluding a comparison in terms of a common Korean unit of account. Furthermore, nebulous exchange rates in both areas make impossible a comparison of the GNP of North and South Korea in terms of dollar equivalents.

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decline in total population between the prewar and the postwar periods. The official index of retail prices, whose steady decline in the postwar years has often been put forth by the North Korean government as tangible evidence of improvement of "consumer welfare," does not appear to be unrealistic when studied in the light of the trend of real GNP.

North Korea recovered its prewar level of real GNP in 1955, largely because of the recovery of its prewar level of industrial production in that year. A notable growth of industrial production in 1955, which exceeded the interwar peak by 44 percent, was accompanied by heavy investment activities that marked a postwar peak. Postwar investment as a percent of GNP was more than twice that of the prewar period, with more than half of the total investment for fixed capital going into industry.

Although the industrial sector received the largest share of investment capital, a comparison of the percentage distribution of capital for the 3 postwar years reveals that the transportation-communications sector received a high investment priority following the cessation of hostilities, with the share of total capital invested in this group in 1954 exceeding 20 percent, or nearly double the 1949 percentage. Declining in the 2 subsequent years, the investment volume of this sector during the Three Year Plan period averaged 13 percent. Investments in housing and in government facilities are other fields in which the postwar shares have increased above the prewar level. On the other hand, the proportions of total capital invested in agriculture, commerce, education, culture, and health have declined from their respective prewar levels.

The available quantitative evidence shows, therefore, that North Korea has made substantial headway under its postwar recovery and development program. This achievement may be attributed on the one hand to Sino-Soviet Bloc assistance and on the other hand to priority allocation of available resources to productive ends. North Korea is achieving viability at a much faster rate than South Korea, a reflection of the undeniable natural advantages in basic resources possessed by North Korea. Minerals, forests, and water power loom much larger in North Korea than in the south, as does the already existing industrial base.

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I. Introduction.

A. Magnitude of Gross National Product.

1. Gross National Product in 1956.

The gross national product (GNP) of North Korea at the end of the Three Year Plan (1954-56) is estimated to have been about 115 billion won (US \$958 million) (see Table 1*). The war brought about a considerable inflation in the price level, which in 1956, although declining since the cessation of hostilities, was about 1.7 times the 1949 level. The 1956 GNP in 1949 values amounted to about 60 percent of the above figure, and this was an increase of 26 percent above the level of 1949 (see Table 2**). In 1956, per capita GNP in current prices amounted to about 14,258 won*** (US \$119). Per capita GNP in 1949 prices, however, was about 59 percent of that amount.

2. Comparison with Neighboring Countries.

Sino-Soviet Bloc economic aid supported a significant portion of the total current resources of North Korea during the Three Year Plan period. In 1955, more than 20 percent of North Korea's available resources**** came from Bloc aid compared with about 10 percent attributed to US aid in South Korea and only 1 percent representing imported resources in the case of Communist China (see Table 3†).

* Table 1 follows on p. 5.

** Table 2 follows on p. 6.

*** This estimate may be checked against the fact that, if the average wage of North Korean workers is assumed to fall within the 7th or 8th grade in the official North Korean wage schedule, the average wage is 18,000 won per annum. 2/ Assuming that the civilian labor force in 1956 totaled 4 million, 3/ total wages (including imputed wages of farmers) would be 72 billion won. Assuming further a total population of 8 million, the per capita money wage in 1956 becomes 9,000 won. To this amount must be added the food ration and allowances that workers and dependents receive, which in value terms probably represent the difference between the estimated per capita GNP and the money wage thus computed.

**** In the case of North Korea, available resources may be defined as GNP plus Sino-Soviet Bloc aid received. For countries like Korea, where the size of external support has been large relative to indigenous product, total available resources must be taken into account as well as domestic product in order to make a meaningful comparison with other countries.

† Table 3 follows on p. 8. (Text continued on p. 9.)

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Table 1

Gross National Product of North Korea
1949 and 1954-56

| | 1949 | | 1954 | | 1955 | | 1956 | |
|---|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|---------|
| | Million Current | | Million Current | | Million Current | | Million Current | |
| | Won | Percent | Won | Percent | Won | Percent | Won | Percent |
| Consumption <u>a/</u> | 39,483 | 72.9 | 78,522 | 84.7 | 72,238 | 73.3 | 83,085 | 71.9 |
| Investment <u>b/</u> | 7,620 | 14.1 | 31,673 | 34.2 | 37,530 | 38.1 | 36,948 | 32.0 |
| Government <u>c/</u> | 4,424 | 8.2 | 6,433 | 6.9 | 6,040 | 6.1 | 5,538 | 4.8 |
| Military <u>d/</u> | 3,100 | 5.7 | 6,453 | 7.0 | 6,190 | 6.3 | 5,650 | 4.9 |
| Net imports and Sino-Soviet Bloc aid <u>e/</u> | -470 <u>f/</u> | -0.9 | -30,384 | -32.8 | -23,470 | -23.8 | -15,734 | -13.6 |
| GNP | 54,157 | 100.0 | 92,697 | 100.0 | 98,528 | 100.0 | 115,487 | 100.0 |

a. From Table 10, p. 25, below.

b. From Table 6, p. 16, below.

c. From Table 16, p. 32, below.

d. From Table 9, p. 24, below.

e. Except for 1949, data are from Table 9. Data for 1949 are for net imports, and data for 1954-56 are for Sino-Soviet Bloc aid.

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Table 2

Nominal and Real National Product of North Korea and Related Data
1949 and 1954-56

| | <u>1949</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
|--|-------------|-------------|-------------|-------------|
| (1) Nominal national product (million current won) <u>a</u> / [*] | 54,157 | 92,697 | 98,528 | 115,487 |
| (2) Nominal national product index (1949 = 100) <u>b</u> / [*] | 100 | 171 | 182 | 213 |
| (3) Real national product (million 1949 won) <u>c</u> / [*] | 54,157 | 48,818 | 57,201 | 67,982 |
| (4) Real national product index (1949 = 100) <u>d</u> / [*] | 100 | 90 | 106 | 126 |
| (5) North Korean official index of "national income" in 1949 prices (1949 = 100) <u>e</u> / [*] | 100 | 94 | 116 | 146 |
| (6) Total population (million) <u>f</u> / [*] | 9.1 | 7.7 | 7.9 | 8.1 |
| (7) Nominal per capita GNP (current won) <u>g</u> / [*] | 5,951 | 12,039 | 12,472 | 14,258 |
| (8) Nominal per capita GNP index (1949 = 100) <u>h</u> / [*] | 100 | 202 | 210 | 240 |
| (9) Real per capita GNP (1949 won) <u>i</u> / [*] | 5,951 | 6,340 | 7,241 | 8,393 |
| (10) Real per capita GNP index (1949 = 100) <u>j</u> / [*] | 100 | 107 | 122 | 141 |
| (11) North Korean index of per capita industrial labor productivity (1949 = 100) <u>e</u> / [*] | 100 | 99 | 118 | 152 |

* Footnotes for Table 2 follow on p. 7.

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Table 2

Nominal and Real National Product of North Korea and Related Data
1949 and 1954-56
(Continued)

| | <u>1949</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
|---|-------------|-------------|-------------|-------------|
| (12) Nominal consumption (million current won) <u>a/</u> | 39,483 | 78,522 | 72,238 | 83,085 |
| (13) Nominal consumption index (1949 = 100) <u>k/</u> | 100 | 199 | 183 | 210 |
| (14) Nominal per capita consumption (current won) <u>l/</u> | 4,339 | 10,198 | 9,144 | 10,257 |
| (15) Real consumption (million 1949 won) <u>c/</u> | 38,787 | 33,846 | 32,687 | 41,751 |
| (16) Real consumption index (1949 = 100) <u>m/</u> | 100 | 87 | 84 | 108 |
| (17) Real per capita consumption (1949 won) <u>n/</u> | 4,262 | 4,396 | 4,138 | 5,154 |
| (18) Real per capita consumption index (1949 = 100) <u>o/</u> | 100 | 103 | 97 | 121 |

- a. From Table 1, p. 5, above.
b. Derived from (1).
c. From Table 20, p. 36, below.
d. Derived from (3).
e. From Table 19, p. 34, below.
f. 5/
g. (1) divided by (6).
h. Derived from (7).
i. (3) divided by (6).
j. Derived from (9).
k. Derived from (12).
l. (12) divided by (6).
m. Derived from (15).
n. (15) divided by (6).
o. Derived from (17).

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Table 3

Comparison of the Allocation of the Gross National Product
and Total Available Resources
of North Korea, South Korea, and Communist China
1955

| | Communist China | | | North Korea | | | South Korea | | |
|---|--|-------------------|-------------------------|---------------------------|-------------------|-------------------------|--|-------------------|-------------------------|
| | Billion Current Yuan ^{a/} | Percent of GNP | Percent of Resources | Billion Current Won | Percent of GNP | Percent of Resources | Billion Current Hwan | Percent of GNP | Percent of Resources |
| Consumption | 67.50 | 73.3 | 72.5 | 72.24 | 73.3 | 59.1 | 924.2 ^{b/} | 88.6 | 78.9 |
| Investment | 14.95 | 16.2 | 16.0 | 37.53 | 38.1 | 30.8 | 127.7 ^{c/} | 12.2 | 10.9 |
| Government | 4.23 | 4.6 | 4.5 | 6.04 | 6.1 | 5.0 | 58.0 ^{b/} | 5.6 | 4.9 |
| Military | 6.50 | 7.1 | 7.0 | 6.19 | 6.3 | 5.1 | 62.1 ^{b/} | 6.0 | 5.3 |
| Available resources | 93.18 | 101.2 | 100.0 | 122.00 | 123.8 | 100.0 | 1,172.0 | 112.4 | 100.0 |
| Net foreign trade balance plus foreign aid | -1.08 | -1.2 | -1.2 | -23.47 | -23.8 | -19.2 | -120.9 ^{d/} (-8.8) ^{e/} | -11.6 (-0.8) | -10.3 (-0.8) |
| GNP | 92.10 | 100.0 | 98.8 | 98.53 | 100.0 | 80.8 | 1,042.3 | 100.0 | 88.9 |

a. 6/

c. Representing 94.3 billion hwan of private and 33.4 billion hwan of government investment.

d. Including US aid of 97.7 billion hwan.

e. Statistical discrepancy

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Looking at the same phenomenon from a different angle, it is apparent that domestic product in North Korea in 1955 constituted only about 81 percent of its total current requirements compared with 89 percent in South Korea. In the case of Communist China, domestic product represented nearly all (99 percent) of the total available resources (see Figure 1*).

Although the above comparison indicates that the degree of dependence of North Korea on external supports in 1955 exceeded that of South Korea, a further comparison shows that this was not the case in 1956. While North Korea's GNP in 1956 had increased to 88 percent of available resources from the preceding year's 81 percent, that of South Korea had declined to 87 percent from the previous year's 89 percent (see Table 4**). In other words, between 1955 and 1956 the indicated degree of North Korea's dependence on external resources for its domestic requirements had declined from 19 percent to 12 percent, whereas the degree of South Korea's external dependence had increased from 10 percent to 12 percent.***

Although this phenomenon is no absolute indication that North Korea is gaining an increasing degree of indigenous economic strength in comparison with South Korea, a comparative analysis of the internal allocation of available resources in the two countries reveals that North Korea has allocated a much larger portion of its resources to productive ends than either South Korea or Communist China, and this policy undoubtedly has had a salutary effect on the inherent growth potentials of North Korea. Figure 2**** shows that North Korea in 1955 consumed as end products and personal services a far smaller portion of its available resources than either of its neighbors. In 1955, nearly 60 percent† of the total available resources represented consumption. The South Koreans, by comparison, consumed nearly 80 percent, and the Chinese 72 percent. In 1955, North Korea allocated more than 30 percent of its resources to investment,†† while South Korea invested less than 11 percent and Communist China 16 percent. By foregoing its present

* Following p. 10.

** Table 4 follows on p. 10.

*** It should be understood that this statement is based on the available quantitative evidence only.

**** Following p. 10.

† Consumption was 73 percent of GNP in 1955, which was below the average, 77 percent, for 1954-56. The fact that 1955 was the peak investment year probably accounts for below-average consumption in that year, both in consumption as a percent of GNP and in absolute level of consumption. GNP grew faster than consumption, and this growth was attributable largely to the increase in capital investment.

†† "Investment" includes an unknown proportion of military expenditures. (See Methodology, Appendix B, section 1, b, p. 40, below.)

Table 4
 Comparison of the Allocation of the Gross National Product
 and Total Available Resources of North and South Korea
 1956

| | North Korea | | | South Korea | | |
|---|----------------|---------|--------------|------------------------|-----------------|-----------------|
| | Billions | Percent | Percent | Billions | Percent | Percent |
| | Current Won | of GNP | of Resources | Current Hwan | of GNP | of Resources |
| Consumption | 83.08 | 71.9 | 63.3 | 1,122.5 a/ | 88.4 | 77.2 |
| Investment | 36.95 | 32.0 | 28.2 | 182.5 a/ | 14.4 | 12.5 |
| Government | 5.54 | 4.8 | 4.2 | 80.8 a/ | 6.4 | 5.6 |
| Military | 5.65 | 4.9 | 4.3 | 68.6 a/ | 5.4 | 4.7 |
| Available resources | 131.22 | 113.6 | 100.0 | 1,454.4 | 114.6 | 100.0 |
| Net foreign trade balance plus foreign aid | -15.73 | -13.6 | -12.0 | -175.9 a/ (-9.5) b/ | -13.9 (-0.7) | -12.1 (-0.7) |
| GNP | 115.49 | 100.0 | 88.0 | 1,269.0 | 100.0 | 87.2 |

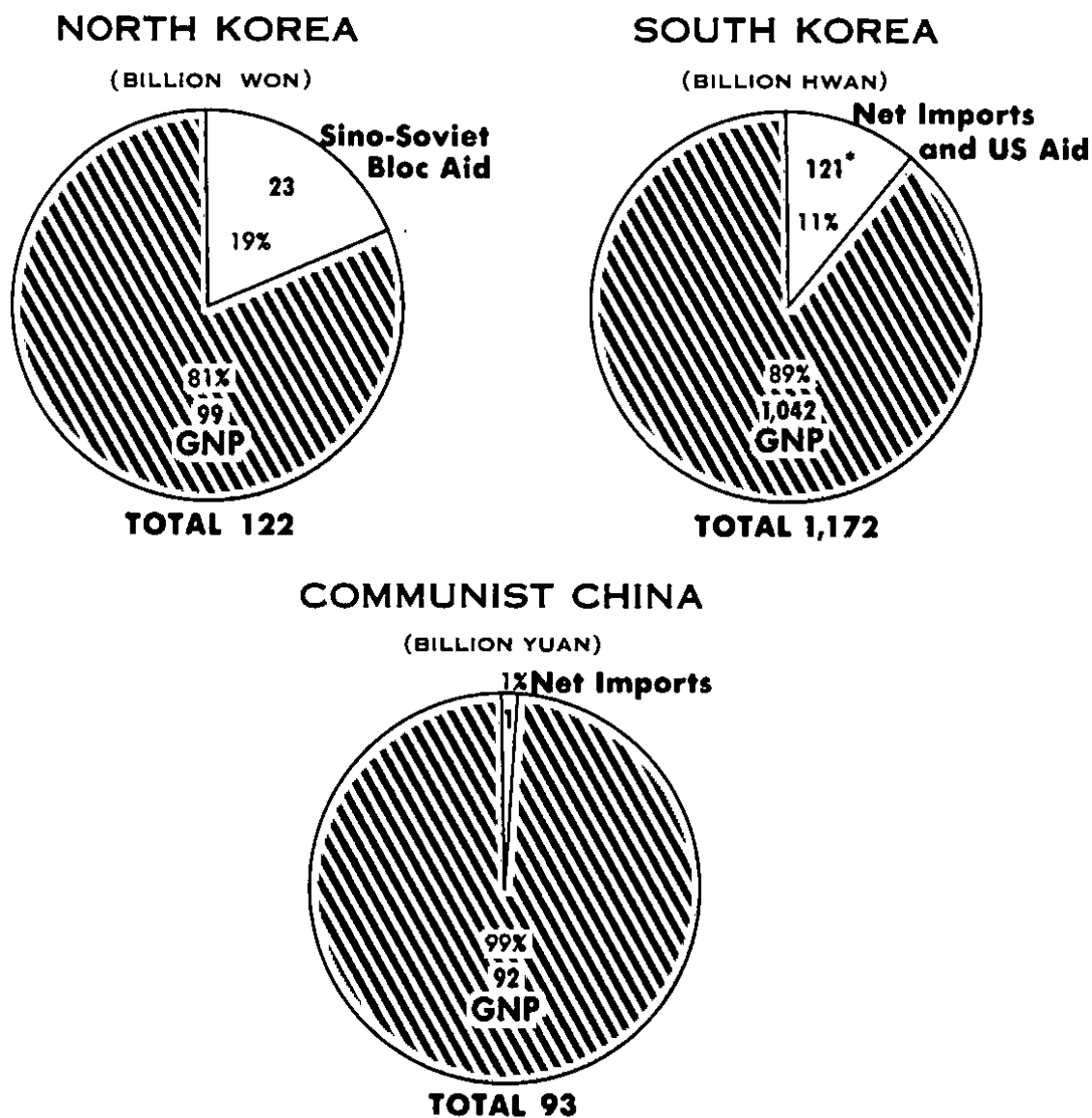
a. 8/

b. Statistical discrepancy

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GROSS NATIONAL PRODUCTS OF NORTH KOREA, SOUTH KOREA AND COMMUNIST CHINA COMPARED WITH THE TOTAL AVAILABLE RESOURCES OF EACH COUNTRY 1955

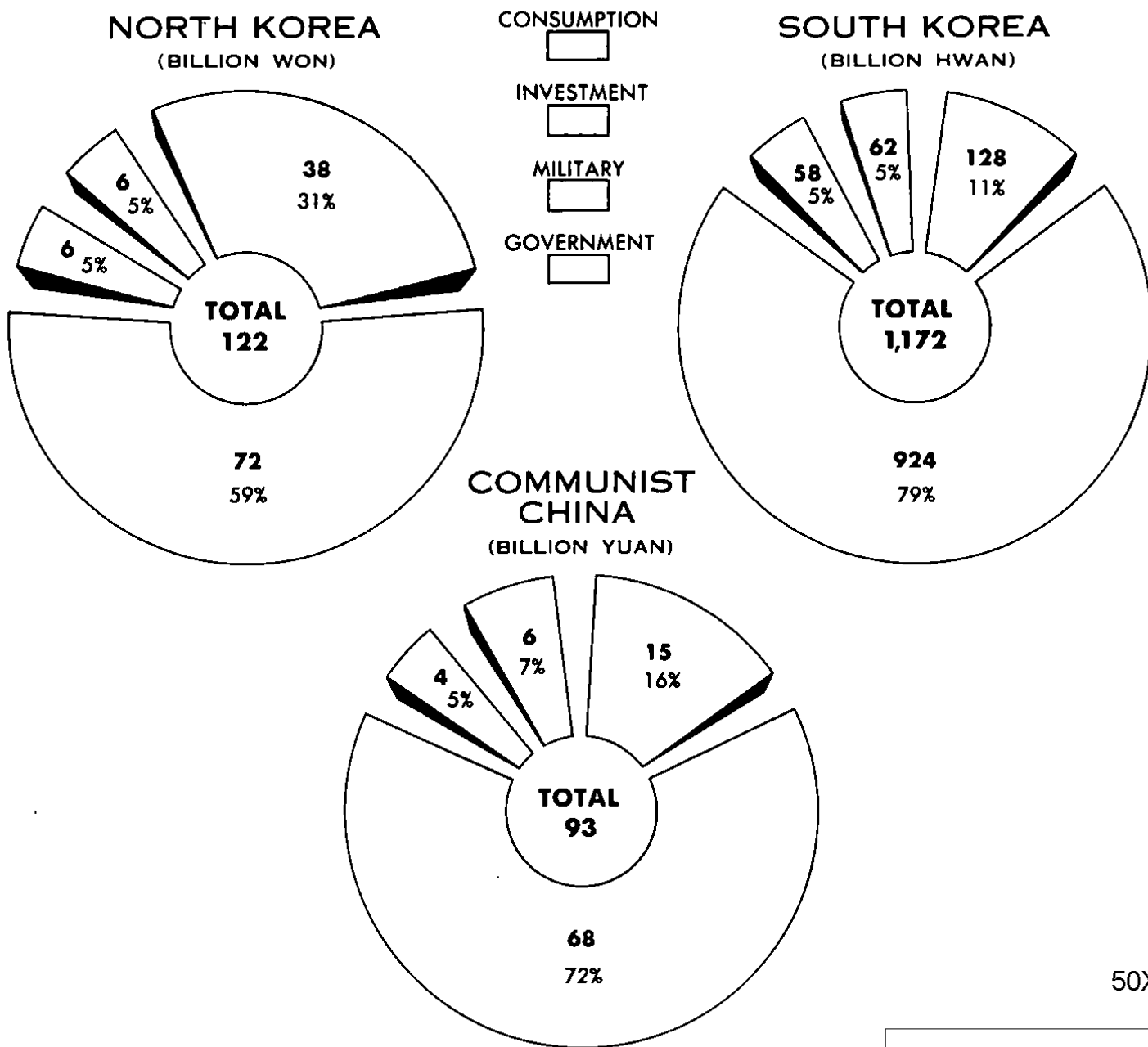


*"Statistical discrepancy" as shown in the original source.



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Figure 2

ALLOCATION OF TOTAL AVAILABLE RESOURCES IN NORTH KOREA, SOUTH KOREA, AND COMMUNIST CHINA, 1955



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material comforts and allocating the largest possible portion of its available resources to investment, North Korea is bent on achieving industrial growth as rapidly as possible. In the light of these facts, it appears likely that North Korea is achieving viability much faster than South Korea.

B. Trends in GNP.

In Table 2* the index of estimated GNP is compared with the index announced by the Central Statistical Bureau of the Central Planning Committee of North Korea. On the average, the North Korean index is about 10 percent higher than the index of estimated GNP. The index of estimated GNP was obtained by deflating GNP in current won by official price indexes. Thus the discrepancy between the index of estimated GNP and the official index of national income arises chiefly from the broader coverage of the former.**

The average annual rate of increase of real GNP during the Three Year Plan period is computed to be 17.9 percent.*** The rate of increase of GNP in current prices during the same period was 18.5 percent. Thus there was no serious price inflation during this period. In spite of this relatively high rate of increase, the real GNP did not regain its 1949 level until 1955, when, largely as a result of a substantial increase in capital investments in that year, GNP exceeded the interwar peak by a small margin.

The 18-percent annual rate of growth of North Korea during the Three Year Plan period appears at first glance rather high when compared with the rate of growth of 7 to 8 percent of Communist China during its First Five Year Plan 11/ and with the annual rate of growth of 17 percent of South Korea during the comparable period. 12/ The validity of this high rate of growth may be assessed in the light of the following considerations. (1) Although North and South Korea were both devastated during the 3 years of hostilities, North Korea started its postwar recovery program on a much more favorable footing than its southern counterpart in terms of natural advantages in raw materials

* P. 6, above.

** This discrepancy probably arises from the fact that the North Koreans follow the Communist concept of "net material product," 9/ which omits the types of services not directly instrumental to material production. Also, the rate of postwar growth of the "material product" sector has been much higher than that of the service sector. This fact tends to overstate the official index in comparison with the index of estimated GNP, which includes the service sector.

*** This figure represents a geometric mean of changes. The rate of increase asserted by the North Koreans is 27 percent. 10/

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(mineral and forestry resources); in the industrial base (electric power, metallurgy, and the extractive industries); and in transportation and communications facilities. 13/ (2) Both the material and technical support of the Sino-Soviet Bloc and the economic policy of the North Korean regime have been heavily oriented toward the fostering of industrial growth through rationalization of resource allocation rather than toward immediate improvement of material welfare of the masses. This policy has prevented the uneconomic depletion of available capital and other resources by the consumer sector which probably has occurred in South Korea. 14/

The period under analysis represents the years in which North Korea received a substantial amount of Sino-Soviet Bloc aid (about 25 percent of GNP), and this aid obviously helped the growth of national product, especially in view of the fact that capital goods and raw materials made up nearly 60 percent of the material aid received. 15/ The fact is, however, that the GNP has grown in real terms while the aid has diminished, and this relationship can be explained as the manifestation of an increase in the inherent productivity of the economy.

II. Consumption.

A. Postwar Change.

The postwar industrial recovery of North Korea owes much to the fact that more than 28 percent of the total available resources were channeled to investments under the Three Year Plan. Evidently this was done at the expense of the material comfort of the consuming masses. Total personal consumption expenditures as a percent of available resources dropped from 72 percent in 1949 to an average of 62 percent* during the Three Year Plan period (see Table 5**).

Largely because of postwar inflation in consumer prices, nominal consumption expenditures in 1956 were double the 1949 level (see Table 2***). Real consumption, however, did not regain the prewar level until 1956. Real per capita consumption,**** on the other hand,

* This average level may be compared with the South Korean consumption levels of about 81 percent in the prewar period (about 1949) 16/ and 88 percent in the postwar period (about 1955-56). 17/

** Table 5 follows on p. 14.

*** P. 6, above.

**** Aggregate consumption is here analyzed in quantitative terms only. There is no assurance implied anywhere that the consumption and absolute living standards have improved in a qualitative sense and in terms of distributive justice among the different layers of economic and social strata of North Korea. Under the footnote continued on p. 13/

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exceeded the 1949 level by a considerable margin. Evidently this paradox is due to a drop in total population from about 9 million in 1949 to about 8 million in 1956, coupled with a rise in per capita labor productivity at a rate higher than the increase in the size of the labor force (see Figure 3*). The indexes of real per capita GNP and of real per capita consumption and the North Korean official index of per capita industrial labor productivity (see Table 2**) exhibit a rather close correlation.

B. Postwar Consumer Price Levels.

Other things being equal, an inverse relationship normally exists between the general price level and the level of real output of an economy. This is the case with respect to the two time series in question, as shown in Figure 4,*** which depicts within the given range of analysis a nearly symmetrical relationship between the downward trend in prices and the upward trend in real GNP.

The state-administered prices, although controlled in North Korea as they are in other Sino-Soviet Bloc countries, are nevertheless anchored on the natural prices in a free market. 19/ The free enterprise system with its competitive prices, although operating in a strictly circumscribed sphere, serves as a guidepost for the government's price policy by acting as an automatic regulator of production and consumption and as a barometer of the natural forces of supply and demand. State-administered prices are kept at such levels as to minimize the disparity between them and free market prices, to prevent the arbitrage profiteering which is rampant when there is a wide price differential between the controlled and free markets and thus to maintain an equilibrium in the flow of goods between the two markets. That the state-administered prices are not entirely arbitrary figures -- but are rather a direct or indirect indication of real economic forces -- is evident from a consideration of the above elements that underlie North Korea's price policy. 20/

Communist preferential rationing system, "elite" individuals, constituting roughly 30 percent of the total civilian population, reportedly enjoy special rations amounting to one-third more than that which the other 70 percent of the population consume. The dietary composition of the food is also said to be poor. 18/

- * Following p. 14.
- ** P. 6, above.
- *** Following p. 16.

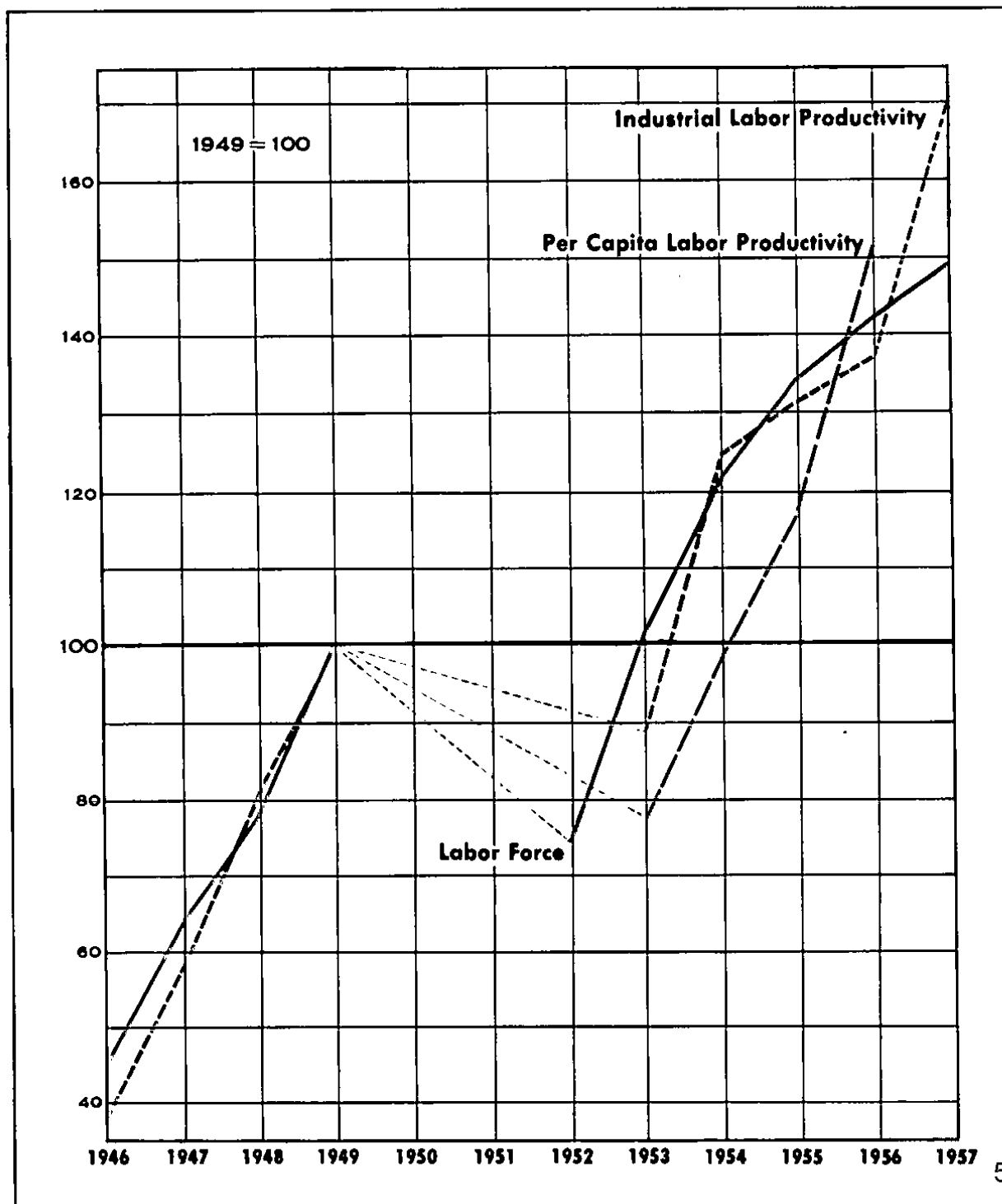
S-E-C-R-E-T

Table 5
Allocation of Total Available Resources of North Korea a/
1949 and 1954-56

| | <u>Percent</u> | | | |
|-------------------------------|----------------|--------------|--------------|--------------|
| | <u>1949</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
| Available resources | | | | |
| Consumption | 72.3 | 63.9 | 59.2 | 63.3 |
| Investment | 13.9 | 25.7 | 30.7 | 28.2 |
| Government | 8.1 | 5.2 | 5.0 | 4.2 |
| Military | 5.7 | 5.2 | 5.1 | 4.3 |
| Total | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> |
| Net imports and aid | -0.9 | -24.7 | -19.2 | -12.0 |
| GNP as a percent of resources | 99.1 | 75.3 | 80.8 | 88.0 |

a. Derived from Table 1, p. 5, above.

NORTH KOREA
INDEX OF CHANGES
IN THE SIZE OF LABOR FORCE, INDUSTRIAL LABOR PRODUCTIVITY
AND PER CAPITA LABOR PRODUCTIVITY, SELECTED YEARS, 1946-57



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III. Investment.

A. Role in the Economy.

North Korea regained its interwar peak GNP level in 1955, in large measure because of a substantial gain realized in that year's industrial production, which exceeded the interwar peak by 44 percent (see Figure 4*). This gain in turn was due to heavy postwar investment activities which reached a peak in 1955 (see Table 6**). About 52 percent of the total capital invested in the economy that year went to the industrial sector, and more than half of the amount invested in industry went into production of capital goods. 21/

Gross domestic investment as a percent of the national product averaged 35 percent in the Three Year Plan period -- more than double that of 1949, when it was 14 percent.

B. Allocation by Sector.

The investment priority in terms of volume in North Korea went to the industrial sector (see Table 7***), which on the average received 50 percent of the total investment capital during the Three Year Plan period compared with 44 percent of the basic investment capital devoted to that sector in 1949. Agriculture, on the other hand, received a smaller share in 1954-56 (9 percent) than in 1949 (11 percent). Investment in domestic commerce also dropped, from 3.5 percent in 1949 to an average of 1.2 percent in the postwar period.

The sector which evidently received the earliest attention for recovery following the cessation of hostilities was the transportation-communications sector (see Table 8****). Apparently for strategic reasons, first priority in the postwar rehabilitation program was given to the reconstruction of the overland transportation system. As a result, almost all trunk rail lines had been restored by early 1954, through intense joint efforts of North Korean and Chinese workers. 22/ By 1955 the rail freight haulage exceeded that of 1949 by 3 percent. A more pronounced increase occurred in motor transport. The volume of motor freight haulage in 1955 was more than six times that of 1949. 23/

Investment in the so-called "productive fields"† as a whole increased from 70 percent prewar to 73 percent postwar. This shift int†

* Following p. 16.

** Table 6 follows on p. 16.

*** Table 7 follows on p. 17.

**** Table 8 follows on p. 19.

† A literal translation of the North Korean term.

†† Text continued on p. 21.

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Table 6
Gross Domestic Investment in North Korea
1949 and 1954-56

| | Million Won | | | |
|--|-----------------|------------------|------------------|------------------|
| | 1949 | 1954 | 1955 | 1956 |
| (1) Fixed capital investment (1949 won) <u>a/</u> | 6,659 | 24,840 | 29,368 | 26,392 |
| (2) Fixed capital investment (current won) | 6,659 | 28,342 <u>b/</u> | 33,443 <u>c/</u> | 32,886 <u>d/</u> |
| (3) Implicit price deflator <u>e/</u> | 1.000 | 1.141 | 1.139 | 1.246 |
| (4) Investment in working capital (current won) | 1,602 <u>f/</u> | 5,552 <u>g/</u> | 6,811 <u>g/</u> | 6,770 <u>g/</u> |
| (5) Increase in inventories (current won) <u>h/</u> | 961 | 3,331 | 4,087 | 4,062 |
| (6) Gross domestic investment (current won) <u>i/</u> | 7,620 | 31,673 | 37,530 | 36,948 |
| (7) Inventories (1949 won) <u>j/</u> | 961 | 2,919 | 3,589 | 3,260 |
| (8) Gross domestic investment (1949 won) <u>k/</u> | 7,620 | 27,759 | 32,957 | 29,652 |

a. From Table 7, p. 17, below.

b. $\frac{24}{1}$

c. $\frac{25}{1}$

d. $\frac{26}{1}$

e. (2) divided by (1).

f. $\frac{27}{1}$

g. $\frac{28}{1}$

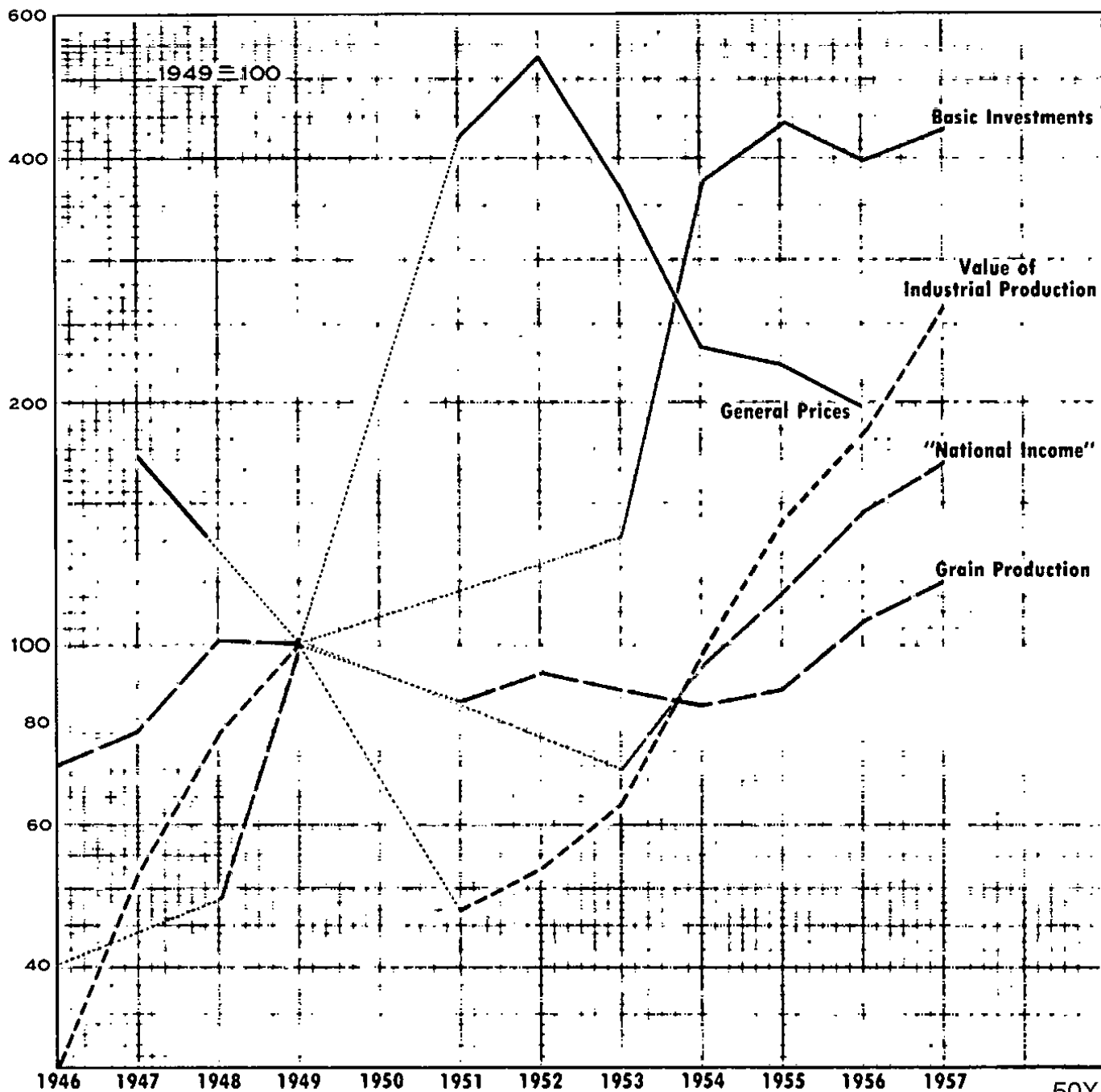
h. $\frac{29}{1}$. (4) times 0.6.

i. (2) plus (5).

j. (5) divided by (3).

k. (1) plus (7).

NORTH KOREA
RELATIVE CHANGES AMONG THE FUNCTIONALLY
RELATED INDEX SERIES, SELECTED YEARS, 1946-57



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Table 7

Basic Investments in North Korea
1949 and 1954-56

Million 1949 Won

| | <u>1949 a/*</u> | <u>1954 b/</u> | <u>1955 b/</u> | <u>1956 c/</u> | <u>1954-56 d/</u> |
|-----------------------------------|-----------------|----------------|----------------|----------------|-------------------|
| "Productive fields" e/ | | | | | |
| Industry | 2,950 | 10,266 | 15,281 | 14,431 | 39,978 |
| Agriculture | 752 | 1,579 | 3,023 | 2,813 | 7,415 |
| Transportation and communications | 719 | 5,083 | 3,581 | 1,895 | 10,559 |
| Commerce | 233 | 270 | 273 | 424 | 967 |
| Total | <u>4,654</u> | <u>17,198</u> | <u>22,158</u> | <u>19,563</u> | <u>58,919</u> |
| "Nonproductive fields" e/ | | | | | |
| Housing | 746 | 2,633 | 3,208 | 3,831 | 9,672 |
| Education and culture | 761 | 2,032 | 1,309 | 1,737 | 5,078 |
| Health | 271 | 409 | 683 | 36 | 1,128 |
| Government facilities | 226 f/ | 2,568 | 2,010 | 1,225 | 5,803 |
| Total | <u>2,004</u> | <u>7,642</u> | <u>7,210</u> | <u>6,829</u> | <u>21,681</u> |
| Total basic investments g/ | <u>6,659</u> | <u>24,840</u> | <u>29,368</u> | <u>26,392</u> | <u>80,600</u> |

* Footnotes for Table 7 follow on p. 18.

Table 7

Basic Investments in North Korea
1949 and 1954-56
(Continued)

- b. The 1949 values moved as shown in Table 17, p. 33, below.
c. Obtained as residuals -- 1954-56 totals minus 1954-55 totals.
d. 31/
e. A literal translation of the North Korean term.
f. Derived from Table 8, p. 19, below.
g. 32/. Totals are derived from unrounded data and may not equal the sum of the rounded components.
These figures were obtained as follows:

| | <u>1953</u> | <u>1954</u> | <u>1955</u> | |
|--|---|-------------|-------------|-------------|
| Investment index (1949 = 100) | 135 | 373 | 441 | Total = 949 |
| Percent of 949 | 14.225 | 39.304 | 46.469 | |
| Investment for 1953-55 is 63.2 billion won Allocated on the basis of distribution (million won) | 8,990 | 24,840 | 29,368 | |
| Investment for 1949 (million won): | 8,900 + 135 = 6,659, which checks roughly with the planned 1949 investment of 6,787 million won. <u>33/</u> | | | |
| Investment for 1956 (billion won): | 80.6 - (24.840 + 29.368) = 26.392, which checks roughly with the 26.3 billion won announced by the Central Statistical Bureau in February 1957. <u>34/</u> | | | |

Table 8
 Percentage Distribution of Basic Investments in North Korea
 1949 and 1954-56

| | <u>1949 a/*</u> | <u>1954 b/</u> | <u>1955 b/</u> | <u>1956 b/</u> | <u>1954-56 Average</u> | |
|-----------------------------------|-----------------|----------------|----------------|----------------|------------------------|---------------------|
| | | | | | <u>Estimated</u> | <u>Announced c/</u> |
| "Productive fields" d/ | | | | | | |
| Industry | 44.3 | 41.3 | 52.1 | 54.7 | 49.6 | 49.6 |
| Agriculture | 11.3 | 6.4 | 10.3 | 10.7 | 9.2 | 9.2 |
| Transportation and communications | 10.8 | 20.5 | 12.2 | 7.2 | 13.1 | 13.1 |
| Commerce | 3.5 | 1.1 | 0.9 | 1.6 | 1.2 | 1.2 |
| Total | <u>69.9</u> | <u>69.3</u> | <u>75.5</u> | <u>74.2</u> | <u>73.1</u> | <u>73.1</u> |
| "Nonproductive fields" d/ | | | | | | |
| Housing | 11.2 | 10.6 | 10.9 | 14.5 | 12.0 | 12.0 |
| Education and culture | 11.4 e/ | 8.2 | 4.5 | 6.6 | 6.3 | 6.3 |
| Health | 4.1 e/ | 1.6 | 2.3 | 0.1 | 1.4 | 1.4 |
| Government facilities | 3.4 e/ | 10.3 | 6.8 | 4.6 | 7.2 | 7.2 |
| Total | <u>30.1</u> | <u>30.7</u> | <u>24.5</u> | <u>25.8</u> | <u>26.9</u> | <u>26.9</u> |
| Total basic investments | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> |

* Footnotes for Table 8 follow on p. 20.

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Table 8

Percentage Distribution of Basic Investments in North Korea
1949 and 1954-56
(Continued)

-
- a. 35/
b. Derived from Table 7, p. 17, above.
c. 36/
d. A literal translation of the North Korean term.
e. The Central Statistical Bureau announced that "of the 30.1 percent invested in the nonproductive fields in 1949, 15.5 percent was invested in the construction of educational, cultural, and public health establishments and 11.2 percent in housing construction." 37/ This calculation leaves an unexplained category of 3.4 percent, which is taken to be basic investment in government facilities for that year. The same category for 1954-56 (7.2 percent average as announced) is composed of 1.4 percent for government facilities and 5.8 percent for "Konggong Kyongni," which may be translated as "public utilities." During the Three Year Plan period this item averaged $80.6 \times 0.058 = 4.6748$ billion won. 38/
The investment in health establishments has been isolated from education and culture on the basis of the budgetary allocation of investment funds in order to conform to the investment index classification in Table 17 (p. 33, below), which was used to move the 1949 absolute values to the postwar period.

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the composition of investment was attained at the expense of "nonproductive fields," whose share of investment dropped from 30 percent prewar to 27 percent postwar. Within the "nonproductive fields," however, housing investment increased consistently during the 3-year period, from 11 percent prewar to an average rate of 12 percent postwar. Investments in education and culture dropped from 11 percent prewar to 6 percent postwar, while investments in health facilities dropped more pronouncedly from 4 percent prewar to about 1 percent postwar. Investments in government facilities, on the other hand, rose from 3 percent prewar to 7 percent postwar.

In sum, a cross-section analysis of North Korea's capital investment program under the Three Year Plan has brought out, in terms of percentage relationships among economic and social sectors which received various shares of investment capital, a rather well-defined order of priority in the North Korean regime's postwar development policy. The genuineness of the often-stressed North Korean policy of giving "absolute" priority to the development of industry is borne out by the fact that about half of all investment was devoted to industry throughout the period 1954-56. In terms of priority in time, however, this was apparently not the case -- although the proportion of total capital which was invested in industry increased gradually (from 41 percent in 1954 to 52 percent in 1955 and 55 percent in 1956, averaging about 50 percent for the 3-year period), the transportation-communications sector received more than 20 percent of the basic investment capital in the first year of the Three Year Plan. The proportion of total capital invested in this sector subsequently dropped to an average of 13 percent for the 3-year period. External evidence indicates that the postwar rehabilitation of the transportation-communications sector was accomplished quite rapidly. The above investment analysis lends substance to such indications.

Tables 9 through 19* give the basic estimates and original data for the aggregative process described above.

* Appendix A, pp. 24-35, below.

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APPENDIX A

STATISTICAL TABLES

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Table 9
Consolidated Budget Revenues and Expenditures in North Korea a/
1949 and 1954-56

| | 1949 | | 1954 <u>b/</u> | | 1955 <u>b/</u> | | 1956 <u>b/</u> | |
|--------------------------------|---------------------------|--------------|---------------------------|--------------|---------------------------|--------------|---------------------------|--------------|
| | Million Current Won | Percent | Million Current Won | Percent | Million Current Won | Percent | Million Current Won | Percent |
| Revenues | | | | | | | | |
| Taxes | 5,121 <u>c/</u> | 24.5 | 11,392 | 12.6 | 9,920 | 9.2 | 8,711 | 8.9 |
| Profits of state enterprises | 15,780 <u>c/</u> | 75.5 | 45,278 | 50.2 | 65,224 | 60.3 | 73,450 | 75.0 |
| Sino-Soviet Bloc aid | | | 30,384 | 33.7 | 23,470 | 21.7 | 15,734 | 16.1 |
| Other revenues | | | 3,130 <u>d/</u> | 3.5 | 9,543 <u>d/</u> | 8.8 | | |
| Total | <u>20,901 e/</u> | <u>100.0</u> | <u>90,184</u> | <u>100.0</u> | <u>108,157</u> | <u>100.0</u> | <u>97,895</u> | <u>100.0</u> |
| Expenditures | | | | | | | | |
| Economic construction | 8,093 <u>e/</u> | 41.3 | 56,077 | 69.6 | 75,345 | 74.8 | 70,701 | 74.3 |
| Education, culture, and health | 3,775 <u>f/</u> | 19.2 | 7,923 | 9.8 | 9,510 | 9.5 | 12,119 | 12.7 |
| Military | 3,100 <u>g/</u> | 15.8 | 6,453 | 8.0 | 6,190 | 6.2 | 5,650 | 5.9 |
| Administrative | 4,650 <u>g/</u> | 23.7 | 6,781 | 8.4 | 6,451 | 6.4 | 5,907 | 6.2 |
| Other expenditures | | | 3,407 <u>d/</u> | 4.2 | 3,123 <u>d/</u> | 3.1 | 815 <u>d/</u> | 0.9 |
| Total | <u>19,618</u> | <u>100.0</u> | <u>80,641</u> | <u>100.0</u> | <u>100,619</u> | <u>100.0</u> | <u>95,192</u> | <u>100.0</u> |
| Surplus | 1,283 | | 9,543 | | 7,538 | | 2,703 | |

a. The term consolidated budget refers to the combined budgets of central and local governments. In 1954-56, central government budgets averaged more than 90 percent of the consolidated budget. 39/

b. 40/

c. 41/

d. Residuals.

e. 42/

f. 43/

g. 44/

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Table 10

Personal Consumption in North Korea
1949 and 1954-56

| | Million Current Won | | | |
|--|---------------------|----------------|------------------|------------------|
| | <u>1949</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
| Retail sales for household consumption <u>a/</u> | 29,138 | 60,439 | 53,526 | 60,314 |
| Farm consumption of food crops <u>b/</u> | 6,902 | 11,641 | 10,570 | 11,548 |
| Household expenditure for rent <u>c/</u> | 1,329 | 1,735 | 1,917 | 2,135 |
| Household electric light <u>d/</u> | 119 | 182 | 202 | 225 |
| Communal services <u>e/</u> | 2,743 | 5,482 | 7,518 | 10,346 |
| Minus transfer payments | -748 <u>f/</u> | -957 <u>g/</u> | -1,495 <u>h/</u> | -1,483 <u>i/</u> |
| Total | <u>39,483</u> | <u>78,522</u> | <u>72,238</u> | <u>83,085</u> |

- a. From Table 11, p. 26, below.
- b. From Table 12, p. 27, below.
- c. From Table 13, p. 29, below.
- d. From Table 14, p. 31, below.
- e. From Table 15, p. 31, below.
- f. 45/
- g. 46/
- h. 47/
- i. 48/

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Table 11

Total Retail Sales for Household Consumption in North Korea
1949 and 1954-56

| | 1949 | 1954 | 1955 | 1956 |
|---|------------------|---------------|----------------|----------------|
| (1) Index of total retail sales (1949 = 100) <u>a/</u> | 100 | 94 | 90 | 119 |
| (2) Total retail sales in 1949 prices (million won) | 32,037 <u>b/</u> | 30,115 | 28,833 | 38,124 |
| (3) Total retail sales in current prices (million won) <u>c/</u> | 32,037 | 69,867 | 63,721 | 75,867 |
| (4) "Social commodities" <u>d/</u> as a percent of retail sales | N.A. | 7.9 <u>e/</u> | 10.4 <u>e/</u> | 14.9 <u>e/</u> |
| (5) "Social commodities" <u>d/</u> in current prices (million won) | 1,106 <u>f/</u> | 5,519 | 6,627 | 11,304 |
| (6) Index of retail sales in current prices (1949 = 100) <u>g/</u> | 100 | 218 | 199 | 237 |
| (7) Retail sales of goods and services to enterprises, in current prices (million won) | 1,793 <u>h/</u> | 3,909 | 3,568 | 4,249 |
| Total retail sales for household consumption in current prices (million won) <u>i/</u> | 29,138 | 60,439 | 53,526 | 60,314 |

a. 49/b. 50/

c. (2) times the general retail price index from Table 19, p. 34, below.

d. North Korean official sources use the term social commodities to refer to retail goods purchased by the government.e. 51/f. 52/

g. Derived from (3).

h. 53/

i. (3) minus (5) minus (7).

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Table 12

Farm Consumption of Food Crops in North Korea
1949 and 1954-56

| | <u>1949</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
|--|------------------|--------------|--------------|---------------|
| (1) Percentage distribution of planted acresages <u>a/</u> * | | | | |
| Grains | 92.8 | 93.0 | 92.7 | 91.7 |
| Vegetables | 2.0 | 3.2 | 3.3 | 3.1 |
| Potatoes | 5.2 | 3.8 | 4.0 | 5.2 |
| Total | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> |
| (2) Index of production (1949 = 100) <u>b/</u> | | | | |
| Grains | 100 | 84 | 88 | 108 |
| Vegetables | 100 | 104 | 120 | 133 |
| Potatoes | 100 | 83 | 79 | 128 |
| (3) Weighted index of food crop production (1949 = 100) <u>c/</u> | | | | |
| Grains | 100 | 78.11 | 81.59 | 99.07 |
| Vegetables | 100 | 3.32 | 3.94 | 4.07 |
| Potatoes | 100 | 3.16 | 3.16 | 6.67 |
| Total | <u>100</u> | <u>84.59</u> | <u>88.69</u> | <u>109.81</u> |
| (4) Value of food crop production (million 1949 won) | 10,785 <u>d/</u> | 9,123 | 9,565 | 11,843 |

* Footnotes for Table 12 follows on p. 28.

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Table 12

Farm Consumption of Food Crops in North Korea
1949 and 1954-56
(Continued)

| | 1949 | 1954 | 1955 | 1956 |
|---|--------|--------|--------|--------------|
| (5) Retail price index (1949 = 100) <u>e/</u> | 100 | 232 | 221 | 199 |
| (6) Value of food crops in current prices (million won) <u>f/</u> | 10,785 | 21,165 | 21,139 | 23,568 |
| (7) Index of agricultural population as a percent of total (1956 = 100) <u>g/</u> | 122 | 108 | 101 | 100 |
| (8) Percent of total food crops retained by farmers adjusted for changes in farm population | 84 | 75 | 70 | 69 <u>h/</u> |
| (9) Farm consumption as a percent of total crops <u>i/</u> | 64 | 55 | 50 | 49 |
| (10) Value of farm consumption in current prices (million won) <u>j/</u> | 6,902 | 11,641 | 10,570 | 11,548 |

a. 54/

b. 55/

c. (1) times (2).

d. 56/

e. From Table 19, p. 34, below.

f. Derived from (4) and (5).

g. Derived from Table 15, p. 31, below.

h. See Appendix B, Methodology.

i. (8) minus the percent of crops sold (15 percent) and feed and seed allowances (5 percent). 57/

j. (6) times (9).

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Table 13

Household Expenditures for Rent in North Korea
1949 and 1953-56

| | <u>1949</u> | <u>1953</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| (1) Index of investment in housing construction (1953 = 100) <u>a/</u> | | 100 <u>b/</u> | 425 | 518 | 619 |
| (2) Additional floorspace (million square meters) <u>c/</u> | | 0.806 | 3.426 | 4.175 | 4.989 |
| (3) Additional number of houses <u>d/</u> | | 36,636 | 155,570 | 189,776 | 226,779 |
| (4) Total number of houses (thousand houses) | 2,215 <u>e/</u> | 1,652 <u>f/</u> | 1,807 <u>g/</u> | 1,997 | 2,224 |
| (5) Household expenditures for rent (cash and imputed) (million current won) | 1,329 <u>h/</u> | 1,586 <u>i/</u> | 1,735 <u>j/</u> | 1,917 <u>k/</u> | 2,135 <u>l/</u> |

a. Derived from Table 17, p. 33, below.

b. 58/

c. Additional floorspace built in 1953-56 was 13.4 million square meters (sq m). 59/ This amount was allocated on the basis of the investment index as follows:

$$\frac{(100 + 425 + 518 + 619)}{100} = 16.62$$

$$x = \frac{13.4}{16.62} = 0.806$$

$$1.00x + 4.25x + 5.18x + 6.19x = 13.4$$

$$0.806 - 3.426 - 4.175 - 4.989 = 13.4$$

Table 13

Household Expenditures for Rent in North Korea
1949 and 1953-56
(Continued)

-
- d. (2) divided by 22 sq m. The average size of the houses built in P'yongyang approximates 22.3 sq m, 60/ which may be compared with the South Korean average of 28 sq m. 61/
- e. 62/. Urban dwellings (680,000) divided by urban population as a percent of total population (30.7 percent, derived from Table 18, p. 33, below).
- f. 63/. $2,215 - 563$ (number destroyed in war) = 1,652 (thousand houses). The average number of persons per house is as follows: 4.1 in 1949, 4.3 in 1954, 4.0 in 1955, and 3.6 in 1956.
- g. $22 \text{ sq m} \times 1.807 \text{ million houses} = 39.754 \text{ million sq m}$.
- h. 65/. $39.754 \div 7.7 = 5.16 \text{ sq m per capita}$. The planned per capita floorspace in 1954 was 6 sq m. 64/
- h. 65/. Based on the average annual rent per month in P'yongyang in 1946, which was 50 won per single-room house.
- i. 66/. Based on the controlled postwar monthly rent of 80 won per house.

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Table 14
Household Consumption of Electricity in North Korea
1949 and 1954-56

| | <u>1949</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
|--|---------------|-------------|-------------|---------------|
| Total number of houses with electric lights (thousand units) | 660 <u>a/</u> | 337 | 374 | 416 <u>a/</u> |
| Household consumption <u>b/</u> (million current won) | 119 | 182 | 202 | 225 |

a. 67/. The consumption of electricity for 1954 and 1955 was estimated on the basis of an assumed correlation between the number of houses with electricity and the total number of houses estimated in Table 13, p. 29, above.

b. 68/. The value of consumption for 1949 was estimated on the basis of the flat monthly rate of 15 won charged per 60-watt light, which is the average size bulb allowed for civilians. The postwar rate is 45 won per light. 69/ It is assumed that, on the average, one light is allowed for each household and that the household consumption of electric power is negligible.

Table 15
Expenditures for Communal Services in North Korea
1949 and 1954-56

| | <u>Million Current Won</u> | | | |
|---|----------------------------|-------------|-------------|-------------|
| | <u>1949</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
| Total education, culture, and health expenditures paid out of budget <u>a/</u> | 3,775 | 7,923 | 9,510 | 12,119 |
| Capital investment in communal facilities <u>b/</u> | 1,032 | 2,441 | 1,992 | 1,773 |
| Current expenditures for communal services | 2,743 | 5,482 | 7,518 | 10,346 |

a. From Table 9, p. 24, above.

b. The postwar price movements in this sector undoubtedly differed from those in the field of industrial capital investment. Because of lack of information, however, these figures were derived from Table 7, p. 17, above, and were used here with out modification for postwar price changes in capital goods (which, according to Table 6, (3), p. 16, above, were relatively slight).

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Table 16

Government Purchases of Goods and Services in North Korea
1949 and 1954-56

| | Million Current Won | | | |
|---|---------------------|-------------|-------------|-------------|
| | <u>1949</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
| Total administrative expenditures <u>a/</u> | 4,650 | 6,781 | 6,451 | 5,907 |
| Basic construction outlays <u>b/</u> | 226 | 348 | 411 | 369 |
| Government purchases of goods and services | 4,424 | 6,433 | 6,040 | 5,538 |
| Military expenditures <u>a/</u> | 3,100 | 6,453 | 6,190 | 5,650 |

a. From Table 9, p. 24, above.

b. Derived from Table 7, p. 17, above. For 1954-56 the 1.4 percent representing the average investment in government facilities (see Table 8, footnote e, p. 20, above) was applied to aggregate investments without adjustment for postwar price changes, because of lack of information.

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Table 17

Index of Basic Investments in North Korea
 1954-56

| | 1949 = 100 | | |
|-----------------------------------|----------------|----------------|----------------|
| | <u>1954 b/</u> | <u>1955 b/</u> | <u>1956 c/</u> |
| "Productive fields" a/ | | | |
| Industry | 348 | 518 | 489 |
| Agriculture | 210 | 402 | 374 |
| Transportation and communications | 707 | 498 | 264 |
| Commerce | 116 | 117 | 182 |
| Index for "productive fields" | 370 | 476 | 420 |
| "Nonproductive fields" a/ | | | |
| Housing | 353 | 430 | 514 |
| Education and culture | 267 | 172 | 228 |
| Health | 151 | 252 | 13 |
| Index for "nonproductive fields" | 381 | 360 | 341 |
| Total basic investments | 373 | 441 | 396 |

- a. A literal translation of the North Korean term.
 b. 70/
 c. Derived from Table 7, p. 17, above.

Table 18

Agricultural Population in North Korea
 1949 and 1954-56

| | <u>1949</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
|---|-------------|-------------|-------------|-------------|
| Estimated total population (million) a/ | 9.1 | 7.7 | 7.9 | 8.1 |
| Percent represented by: | | | | |
| Agricultural cooperative members b/ | | 17.1 | 26.1 | 40.0 |
| Independent peasants b/ | 69.3 | 44.2 | 31.2 | 16.6 |
| Total b/ | <u>69.3</u> | <u>61.3</u> | <u>57.3</u> | <u>56.6</u> |
| Agricultural population (million) | 6.3 | 4.7 | 4.5 | 4.6 |

- a. 71/
 b. 72/

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Table 19
Selected Indexes in North Korea
1946-49 and 1951-57







| | 1946 | 1947 | 1948 | 1949 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 |
|---|--------------|----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Basic investments | N.A. | N.A. | N.A. | 100 <u>a/</u> | N.A. | N.A. | 135 <u>a/</u> | 373 <u>a/</u> | 441 <u>a/</u> | 374 <u>b/</u> | 408 <u>c/</u> |
| Total labor force in "people's economy" <u>d/</u> | 46 <u>e/</u> | 65 <u>e/</u> | 78 <u>e/</u> | 100 <u>e/</u> | N.A. | 74 <u>e/</u> | 102 <u>e/</u> | 122 <u>e/</u> | 135 <u>e/</u> | 143 <u>f/</u> | 149 <u>g/</u> |
| Industrial labor productivity | 39 <u>h/</u> | 59 <u>h/</u> | 81 <u>h/</u> | 100 <u>h/</u> | N.A. | N.A. | 89 <u>i/</u> | 125 <u>i/</u> | 132 <u>j/</u> | 138 <u>i/</u> | 171 <u>k/</u> |
| Per capita industrial labor productivity | N.A. | N.A. | N.A. | 100 <u>k/</u> | N.A. | N.A. | 78 <u>l/</u> | 99 <u>m/</u> | 118 <u>m/</u> | 152 <u>l/</u> | N.A. |
| Value of industrial production | 30 <u>n/</u> | 52 <u>o/</u> | 78 <u>o/</u> | 100 <u>p/</u> | 47 <u>p/</u> | 53 <u>p/</u> | 64 <u>p/</u> | 97 <u>p/</u> | 144 <u>p/</u> | 183 <u>p/</u> | 264 <u>q/</u> |
| Grain production | 71 <u>r/</u> | 78 <u>r/</u> | 101 <u>r/</u> | 100 <u>r/</u> | 85 <u>r/</u> | 92 <u>r/</u> | 88 <u>s/</u> | 84 <u>s/</u> | 88 <u>s/</u> | 108 <u>s/</u> | 120 <u>t/</u> |
| "National income" <u>u/</u> in 1949 prices | 40 <u>v/</u> | N.A. | 48 <u>w/</u> | 100 <u>w/</u> | N.A. | N.A. | 70 <u>w/</u> | 94 <u>w/</u> | 116 <u>w/</u> | 146 <u>w/</u> | 168 <u>x/</u> |
| Retail prices of state and cooperatives | N.A. | N.A. | 119 <u>y/</u> | 100 <u>y/</u> | N.A. | 374 <u>y/</u> | 261 <u>y/</u> | 183 <u>y/</u> | 163 <u>y/</u> | 143 <u>z/</u> | 135 <u>aa/</u> |
| General retail prices | N.A. | 172 <u>bb/</u> | N.A. | 100 <u>bb/</u> | 427 <u>bb/</u> | 531 <u>bb/</u> | 368 <u>bb/</u> | 232 <u>cc/</u> | 221 <u>cc/</u> | 199 <u>cc/</u> | N.A. |

a. 73/
 b. Derived from Table 17, p. 33, above.
 c. 74/
 d. North Korean official sources use the term people's economy to refer to all state and cooperative enterprises.

f. 76/ 50X1
 g. 78/ The total labor force in 1957 was 844,000 and in 1956, 808,000. 78/ 50X1
 Hence $\frac{844}{808} \times 143 = 149.37$.

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Table 19
Selected Indexes in North Korea
1946-49 and 1951-57
(Continued)

| | |
|---|------|
| j. 81/  | 50X1 |
| p. 87/  | 50X1 |
| s. 90/  | 50X1 |
| u. See I, B, and the second footnote, p. 11, above.  | 50X1 |
| w. 93/  | 50X1 |
| z. 96/  | 50X1 |
| bb. 98/ cc. 99/ | |

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Table 20

Gross National Product of North Korea
 in Constant (1949) Prices
 1949 and 1954-56

| | Million 1949 Won | | | |
|--|------------------|---------|---------|---------|
| | 1949 | 1954 | 1955 | 1956 |
| Consumption <u>a/</u> | 39,483 | 33,846 | 32,687 | 41,751 |
| Investment <u>b/</u> | 7,620 | 27,759 | 32,957 | 29,652 |
| Government <u>c/</u> | 4,424 | 2,773 | 2,733 | 2,783 |
| Military <u>d/</u> | 3,100 | 5,656 | 5,435 | 4,535 |
| Net imports and Sino-Soviet Bloc aid <u>e/</u> | -470 | -21,216 | -16,611 | -10,739 |
| Gross national product in constant (1949) prices | 54,157 | 48,818 | 57,201 | 67,982 |
| Index | 100 | 90.14 | 105.62 | 125.53 |
| North Korean index of "national income" in 1949 prices <u>f/</u> | 100 | 94 | 116 | 146 |

a. Figures from Table 10, p. 25, above, divided by the retail price index.

b. From Table 6, p. 16, above.

c. Figures from Table 16, p. 32, above, divided by the retail price index.

d. Figures from Table 16, p. 32, above, divided by the implicit price deflator (see Table 6, (3), p. 16, above).

e. From Table 21, p. 37, below. Data for 1949 are for net imports and data for 1954-56 are for Sino-Soviet Bloc aid.

f. From Table 19, p. 34, above.

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Table 21

Net Imports and Aid in North Korea
in Constant (1949) Prices
1949 and 1954-56

| | Million Won | | | |
|--|-------------|-------------|-------------|-------------|
| | <u>1949</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
| (1) Net imports and aid in current prices <u>a/</u> Average composition of aid goods, 1954-56 <u>b/</u> : | 470 | 30,384 | 23,470 | 15,734 |
| (2) Capital goods and raw materials, 60 percent | | 18,230 | 14,082 | 9,440 |
| (3) Consumer goods, 40 percent | | 12,154 | 9,388 | 6,294 |
| Sino-Soviet Bloc aid in 1949 prices: | | | | |
| (4) Capital goods and raw materials <u>c/</u> | | 15,977 | 12,363 | 7,576 |
| (5) Consumer goods <u>d/</u> | | 5,239 | 4,248 | 3,163 |
| Net imports and Sino- Soviet Bloc aid in 1949 prices <u>e/</u> | 470 | 21,216 | 16,611 | 10,739 |

a. From Tables 1 and 9, pp. 5 and 24, respectively, above.

b. $\frac{100}{}$

c. (2) divided by the implicit price deflator (see Table 6, (3),
p. 16, above.

d. (3) divided by the retail price index.

e. (4) plus (5). Data for 1949 are for net imports, and data for
1954-56 are for Sino-Soviet Bloc aid.

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APPENDIX B

METHODOLOGY

Although a reasonable number of studies on North Korea have been made heretofore at the plant or industry level, there has long been a serious gap in economic intelligence on the aggregative level. The present report represents the first attempt at estimating the GNP of this country.

1. Nature of Data.

The scarcity of aggregative data imposes the following restrictions on the scope and depth of GNP estimates for North Korea at the present time.

a. Approaches Used.

Ideally, a thoroughgoing aggregative study should use all three independent approaches in arriving at an estimate of GNP -- by end-use, by value added, and by distributive shares -- the estimate for each of which should be arrived at inductively for mutual check and balance of final results. But the quality and quantity of data available are such that this procedure is not possible for North Korea.

Official indexes of gross value of industrial production for 1946, 1949, 1953, and 1955; the percentage distribution of industries in total industrial production value covering 1944, 1949, 1953, and 1955 101/; and absolute figures on gross value of production for industries for 1946 are available It is possible to obtain gross value of production for 1949, 1953, and 1955 by applying the above set of indexes to the 1946 value data, thus obtaining gross output values in 1946 prices for the industrial sector. Modified value-added weights of Communist China or South Korea may be used to derive a rough estimate of GNP by industrial origin. From the accounting truism that what is spent equals what is received, which in turn equals what is produced, it follows that total expenditures (GNP by end use) equal total income earned by factors of production (GNP by distributive shares), which equals total net product (GNP by sector of origin), and that the magnitudes for either of the two other estimates may be obtained by means of equality if one of the triple-identity series can be estimated. The GNP for North Korea by sector of origin, for example, may be obtained by using the above-cited data and treating the nonindustrial sector as residual.

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A deductive approach such as this, however, is tenuous at best, not to speak of the danger of using foreign analogies to get value-added weights. One of the advantages of GNP by sector of origin is that this method, if approached inductively through a careful estimation of sector weights industry by industry, will bring out, among other things, a bird's-eye view of the structural composition of the total economy as of a given time -- or, if a time-series analysis is possible, an intertemporal comparison of structural changes. Lacking the necessary data, one is compelled to resort to a secondary course, as was done in the present report -- that is, an analysis of sector allocation of capital investment -- to arrive at the next best approximation of the structural features of the economy.

Because the primary purpose at hand is to estimate the overall magnitude of GNP rather than to probe into the intricacies of the internal relationships of the economy at a fairly sophisticated level of analysis (which by the nature of the restrictions imposed by the dearth of data is quite out of the question for North Korea), the end-use approach has been used, not only for the reason that this approach has the advantage over other approaches in the smaller probable margin of error in the component estimates 102/ but also for the reason that it is the only avenue open for a reasonably reliable estimation of GNP for North Korea at the present level of economic intelligence. The estimates of growth in real GNP are derived from deflating GNP in current won by official price indexes of retail trade and investment. These indexes are adequate to give broad indications of trends in GNP and its components. Because no information on the methods of construction of these indexes are available, however, the reliability of growth trends in comparison with measured trends in other countries is subject to considerable uncertainty.

b. Objectivity.

A conscious effort has been made in this report to avoid estimates based on intuitive judgments. Acceptance of data as reported -- with a minimum of dogmatic refinements unless the contrary is obviously true -- allows little or no room for personal predilections but leaves some inconsistencies in the final figures. For example, the reported figures on national defense expenditures are obviously too small in the light of the available information on North Korea. Evidently the amount reported in the budget represents military wages to the exclusion of all other defense expenditures. Most of the latter apparently are buried in the capital investment figures, thus making these figures disproportionately large in relation to the size of GNP. Because of the absence of the information necessary for making a reasonably safe adjustment of these figures and because of the fact that the above distortion would not alter the final GNP figure owing to mutual cancellation of errors

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within the components themselves, the figures have been accepted as they stand.

The use of subjective judgments in the selection of data is unavoidable in view of the many conflicting reports published by North Korean official and unofficial sources. Discrepancies are particularly prevalent among the figures expressed in value terms which occur in the North Korean reports in either current or constant prices without specifications. Also, if it is known to be in constant value, the base year is not always defined in these reports.

This kind of ambiguity occurs in both absolute figures and indexes, but conflicts are more numerous among absolute figures than indexes. For this reason, if a choice is possible between the two and if the value obtained through index series does not agree with an absolute figure the former is used in preference to the latter.

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Where there is conflict between the figures of the Central Statistical Bureau of the Central Planning Commission and those of other sources, the former are taken to be correct, insofar as reasoned judgment does not dictate otherwise. If the disagreement is found in figures reported by the same source more than once, the latest figure is taken to be more reliable unless the contrary is obvious in the light of other evidence.

The years 1944, 1946, 1949, and 1953 are familiar base years for most time series appearing in the North Korean publications. The year 1944 represents the peak level of output for most sectors under the Japanese regime, and it is mentioned by the North Koreans in their discussions of the First Five Year Plan as a criterion for their production goals. The year 1946 represents the first full calendar year under the Communist regime, and the year 1949 is the "normal" year under the new regime and often is the base of comparison for the Three Year Plan goals. The year 1953 is used by the North Koreans for propaganda purposes because that year had the lowest level of economic activity outside the war years, and, naturally, comparisons with any subsequent years would show impressive gains.

The conversion of time series based on any of these years into a common base does not pose any problems if the series are based on some homogeneous units of measurement. In dealing with value data, unlike the index of physical production, difficulties are encountered which are insurmountable without recourse to additional information. A fair amount of information is available from captured documents on 1946 economic aggregates in value terms. The absence of pertinent information on the monetary reform that took place in November 1947,

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however, creates a serious gap in the link of value relatives between any of the years before and after 1947, and this makes the 1946 data useless for the purposes of current analysis. For example, the estimate of gross value of industrial production for 1946 is of historical significance only, in the absence of price relatives linking 1946 with subsequent years.

2. Estimation of Personal Consumption Expenditures.

Estimation of personal consumption expenditures in North Korea represents the most troublesome and the weakest phase of the GNP estimate. Paucity of data permits only the crudest estimation of that portion of aggregate expenditures representing personal end use consisting of total retail sales, the farm consumption not entering in the trade, the household rent, expenditures for electricity, and government current expenditures for communal services. The estimate of expenditures for personal services should ordinarily include expenditures for transportation and communications services.

it is possible to obtain data on passenger-kilometers for train and automobile services for 1946-48. 103/ The postwar index of passenger turnover rate 104/ may be used to derive the figures for passenger-kilometers for each of the postwar years under analysis. The conversion into value terms entails the average train and bus fare paid. The average passenger train fare was 0.48 won per kilometer in 1949 105/ and 1.63 won in 1954-56, 106/ and the average bus fare was 1.35 won 107/ in 1949 and 3 won in 1954-56. 108/ Aggregate transportation expenditures estimated on the basis of these figures yields a magnitude roughly equal to 1 percent of GNP. This may be compared with 1.8 to 2 percent of the monthly cash income spent by the South Koreans for these services. 109/ In the case of North Korea, however, a considerable part of the expenditures presumably represents official travel. It is impossible to separate this amount, on the basis of available data, from that portion representing personal traveling expenses. In view of these difficulties and also of the fact that the magnitude involved is of such a size as not to distort the final figures in any perceptible degree, this estimate was omitted from the final consumption figures.

For the estimation of total retail trade, an absolute figure on retail trade is available for 1949, the figure on "commodity turnover" for 1956, and a retail trade index series covering 1949 and 1953-56. 110/ The total volume of commodity turnover in 1953 was 31.6 billion won. 111/ The turnover in 1956 was 2.8 times that in 1953, 112/ and thus the value of trade for 1956 was 88.48 billion won. There are not enough data available, however, to make it possible to segregate retail trade volume from this figure. Consequently, the 1949 retail trade figure was moved

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to 1954-56 by using a retail trade index which is based on constant 1949 value terms. This was then converted on a current price basis.

In the estimation of farm consumption outside the trade sector, the crucial figure is the percent of total food crops consumed by farm households. In this connection, the following facts are known for 1956:

Total population: 8,100,000 113/
Agricultural cooperative members: 40 percent, or 3,240,000 114/
Individual peasants: 16.6 percent, or 1,345,000 115/
Number of agricultural cooperatives as of December 1956:
15,825 116/
Average number of households per cooperative in December 1956:
54.7 117/
Total grain production: 2,870,000 metric tons* 118/
Average volume of grains retained per cooperative member household: 1,616 kilograms (kg) 119/

From these data the following estimates can be derived:

$15,825 \times 54.7 = 865,628$, the total number of cooperative member households
 $1,616 \text{ kg} \times 865,628 = 1,398,855$ tons, the total amount of grains retained by cooperative households
 $1,398,855 + 2,870,000 = 48.74$ percent, the percent of total amount of grains retained by cooperative households
 $3,240,000 + 865,628 = 3.74$, the average number of persons per cooperative member household
 $1,345,000 + 3.74 = 359,626$, the total number of peasant households
 $1,616 \text{ kg} \times 359,626 = 581,156$ tons of grain retained by peasant households
 $581,156 + 2,870,000 = 20.25$ percent, the percent of the total amount of grains retained by peasant households

Thus the estimated percent of total food crops retained by farm households in 1956 is $48.74 + 20.25 = 68.99$ percent. This leaves a residue of about 31 percent, a large part of which (28 percent in 1955) 120/ presumably represents taxes in kind and state purchase of grains. The farm consumption was estimated by deducting from this amount the average percent of grain output reportedly sold by farmers (15 percent) and the allowances for seed and fodder (5 percent). 121/

* Tonnages are given in metric tons throughout this report.

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Implied assumptions are that the average size of peasant households (3.74 persons) is equal to that of cooperative member households and also that the average amount of retained grains (1,616 kg) is the same in both groups. Indications are that a higher tax is levied against individual peasants than against cooperative members, but this may be offset by the higher unit output of nonmembers, with the net effect that the average amount of grains retained by peasant households may approximate 1,616 kg. In any event, small individual variations tend to even out when dealing with national aggregates.

3. Derivation of Percentage Distribution of Capital Investments, 1949 and 1954-56.

It is useful to know how much of the total investment capital went into each of the economic and social fields in North Korea during the Three Year Plan period. North Korea has only published data on the total for this period. Consequently, the following round-about process had to be resorted to in order to obtain the breakdown for each year of the 3-year period.

The Central Statistical Bureau of the Central Planning Commission has announced the index of basic construction investments for the years 1953-55 in terms of value as of 1 January 1950. 122/ The same source gives the percentage breakdown of the total fixed investment for 1949, as shown in Table 8, column 1,* and also the information that "the total volume of investments in capital construction during the period from 1953 to 1955 amounted to 63.2 billion won in terms of value estimated as of 1 January 1950." 123/

These announcements give a starting point for estimating the total volume of investments by industries for 1949 and for the first 2 years of the Three Year Plan period. First the 63.2 billion won of total investments in capital construction for 1953-55 was distributed among the years 1953-55 on the basis of the index of total investments. In early February 1957 the Central Statistical Bureau announced that total state investment would be 80.6 billion won (in 1949 prices) during the Three Year Plan period and also gave the industry-by-industry distribution of that amount. 124/ The 1956 investment was obtained by deducting from the 3-year total the sum of the investments for 1954-55.

Of the total capital invested for 1949, 69.9 percent went into "productive fields" and 30.1 percent into "nonproductive fields." Of the latter, 11.2 percent went into housing and 15.5 percent into education, culture, and health facilities, leaving 3.4 percent in an unexplained category. 125/ This is treated in Tables 7 and 8** as

* P. 19, above.

** Pp. 17 and 19, respectively, above.

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representing the capital investment in government facilities. The hybrid category for "education, culture, and health" had to be divided up into two separate categories commensurate with the breakdown in Table 17.* This was done, in the absence of necessary information, on the basis of the budgetary allocation of state expenditures for these categories.

The 1949 figures were then moved to 1954-55 for each of the categories as in Table 7.** The indexes for 1956 were derived from the absolute figures obtained as residuals of the 3-year totals shown in Table 7.

The above procedures finally yielded the percentage distribution of capital investments in all the branches for each of the years in question. As a means of checking, the average percentage distribution for each category for the Three Year Plan period is compared with the averages published by the Central Statistical Bureau as in Table 8.***

Estimation of inventory accumulation presents almost impossible problems. At the present level of economic intelligence on North Korea, there are no data on the size of the inventory accumulation in North Korean enterprises. Financial records dated 30 June 1950 of the Kangso Electrical Machinery Manufacturing Company 126/ are available from captured North Korean documents and represent the only source containing even a rough approximation of the above information. A careful study of the balance sheet and profit-and-loss statement of this company reveals that inventories (goods in process and raw materials on hand) made up roughly 60 percent of the total current assets. Through a rather tenuous generalization, it is assumed that this figure roughly represents the inventories as a percent of the total working capital in North Korea today. It may be mentioned for comparison that, in the case of the USSR, roughly 75 percent of working capital is estimated to represent inventories. 127/

* P. 33, above.
** P. 17, above.
*** P. 19, above.

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