

Economic Comparison of North and South Korea

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Summary

This study limits itself to the comparison of some economic statistics of the Democratic People's Republic of Korea (DPRK) and the Republic of Korea (ROK). In a first section it discusses the reliability of the available data and considers various factors concerning the comparability of today's economic achievements in North and South Korea. In the second part overall economic indicators (GNP/NI per capita, growth rates, industrial structure of GNP) and output data are analyzed. After adjustments for certain exchange rates and the socialist definition of NI an estimated DPRK per capita NI of 375 US dollars for 1970 corresponds to a ROK per capita NI of 110 US dollars for the same year. This very rough indication of the North's economic superiority over the South is confirmed by the more relevant comparison of per capita output data for electricity, coal, oil (combined to a total of energy production), steel, iron, cement, chemical fertilizer, rice, meat, and textile fabrics. In 1970 the DPRK had reached a clearly and sometimes several times higher level than the ROK in all of these data of production per person.

Introduction

The Democratic People's Republic of Korea (DPRK) and the Republic of Korea (ROK) once opponents in a disastrous civil war have recently been following the road of relatively open and peaceful competition. Moreover, the two parts of this divided nation have developed their respective societies on the different principles of socialism and capitalism. It is therefore interesting to compare their achievements up to date. Such a study could be of use not only to Koreans but also to others concerned with development strategies and political programs for the countries of the "Third World".

In this essay the comparison is limited to the economic field. This is not to pay tribute to the general preoccupation with economy which is typical of capitalism and too often of socialism as well. Political, social and cultural aspects of such a comparison would be equally important, if not more important in the long run. But for nations struggling out of dire poverty economic problems do have top priority.

This comparison is further restricted to certain statistical data. Though the statistics chosen are certainly indicative of an economy's potential they, however, merely show the surface of an economic system. A comprehensive comparison of a socialist and a capitalist economy must go further and look at the differences in economic planning and investment allocation, income distribution, industrial management, the organization of agriculture, and the working and living conditions of the people as well as their social and cultural life. Such a comparative study

must also analyze the ownership of the means of production on either side and consider to what extent distinctions in this respect relate to other societal differences. These and other comparative questions transcend the scope of this article which must be limited to the comparison of a few statistical indicators. We shall just glance at the tips of two icebergs.

Methodological considerations concerning the reliability of available data and the comparability of the two sides must first be dealt with carefully.

1. Methodological Considerations

Reliability of the available Data

In terms of quantity, there is a wealth of data from the ROK while the data released by the DPRK are extremely limited and not more recent than 1970. Nevertheless, we have enough information for an overall comparison of the economic situation as of 1970. But how reliable is the information available?

This question is often asked with regard to data from the Democratic People's Republic of Korea. The only statistics known inside as well as outside the DPRK are those published by the government or the Worker's Party of Korea. This does not mean, however, that the data can be dismissed as unreliable propaganda, a too common assumption in capitalist countries. There are limits to the practice of publishing misleading statistics because permanent selfdeception will lead to disaster.

Joseph Sang-hoon Chung, one of the very few scholars who has studied the North Korean economy, lists the following reasons supporting the reliability of DPRK economic statistics¹:

1) A planned economy needs more reliable data than a market economy; 2) no difference can be observed between data for internal use and those published for propaganda purposes (this was also established for China and the Soviet Union); 3) cross-checking proved that available data have an inner consistency; 4) the tendency for enterprises and agencies to exaggerate their results when reporting to higher authorities has a limit because future plan targets will be determined on basis of these reports; 5) omission rather than falsification is the method used to conceal unfavorable results²; 6) according to the "law of equal cheating", all relative data such as growth figures are not affected as long as the extent of falsification, omission, errors, etc., remain constant – and this is assumed to be so; 7) foreign trade data can be checked by the data of trade partners.

Chung also notes a number of reasons which make for upward biases in official statistics, such as increased statistical coverage, inclusion of traditional products and outputs which newly enter the exchange net-work, etc., but adds that these upgrading factors work in any developing economy. Difficulties are caused by the communists' preference for relative indices rather than absolute figures. Often they lack information of the base year, aggregation and the like, or the base year seems to be chosen arbitrarily.

¹ Chung, Joseph S., *The North Korean Economy: Structure and Development*. Wayne State University Dissertation, 1964 (Doct. Diss. Series No. 65–7720), p. 10–14. See also Chung's forthcoming book on the North Korean economy to be published by Stanford University Press, 1973/74.

² A striking example for this thesis is the omission of important plan figures in the final report on the fulfillment of the Seven-Year-Plan. See Chung, J. S., *The Six Year Plan (1971–76) of North Korea: Targets, Problems and Prospects*. In: *Journal of Korean Affairs*, 1/2 (July 1971), 15–26, p. 21.

With regard to the Republik of Korea the widespread assumption that South Korean official publications can be trusted since the ROK belongs to the "free world" is certainly as naive as the presupposition that any communist publication must be mistrusted. At no time, since its establishment (with the possible exception of 1960) has the Republik of Korea enjoyed freedom of information. Publication of unfavorable facts and related criticism was possible most of the time as long as it concerned minor issues. Economic data with political implications, however, such as unemployment, inflation, rural-urban migration, income distribution (not to mention distribution of wealth), ownership of important industrial establishments, involvement of foreign capital, military expenditures, corruption, etc., have always been under government control. The data that have been published must be used with great care. This also holds true for such essential economic data as GNP or national income per capita. Since their determination depends on the calculation of the official inflation rate, which can be manipulated and probably was understated for political and economic reasons, there is a problem of "upward biases". On the other hand, South Korean society is much more open to foreign observers than North Korea, and its economy is so much involved with foreign creditors and international agencies that the ROK's economic performance is closely watched from outside. In particular foreign trade statistics, which play a crucial role in the ROK's economic propaganda can easily be checked with statistics of her trade partners which are almost exclusively advanced capitalist countries.

Comparability of North and South Korea.

Is it fair to compare today's economic achievements of the DPRK and the ROK as if they were reached under equal conditions? To answer this question we have to consider a number of factors.

North and South Korea have a common historical background. Until 1945 Korea had been a unified nation for almost 1300 years. From 1910 till 1945 the whole Korean peninsula was under Japanese colonial rule. With considerable investments Japanese capital laid the groundwork of Korea's industrialization — though naturally for its own exploitive interests³.

Geographically, the Korean territory has been divided roughly into two halves since 1945: ca 47,000 square miles belong to the DPRK, about 45,000 square miles to the ROK. The Northern half is more mountainous, with only 17 per cent of the land suitable for agricultural use; 24 per cent of the land in South Korea is arable. Also the soil in the South is considered to be better. The Northern climate is considerably colder and less favorable for agriculture, particularly rice growing, than the Southern which allows two crops a year in the most Southern provinces. Before 1945 rice and barley was mainly grown in the South, which had 75 per cent of all paddy land, while the North lead in such crops as wheat and corn⁴.

One of the more important factors for comparison of North and South Korea is the distribution of resources. In general, the Korean peninsula is not rich in natural resources. There are iron ore and coal deposits all over the territory, though of

³ For a detailed description and evaluation of this period see Park, S. J., *Die Wirtschaftsbeziehungen zwischen Japan und Korea 1910—1968*. Wiesbaden 1969, pp. 21—108.

⁴ Park, S. J., *Die Wirtschaftsbeziehungen . . .* (see footnote 3), p. 46.

minor qualities. More relevant are non-ferrous minerals such as gold, which is largely found in the North, and tungsten, which is abundant in the South; both are important export items. Graphite, magnesium, limestone, mica, and fluorite are produced in considerable amounts. "More of these resources are concentrated in the North than in the South."⁵

The distribution of industrial establishments was very uneven in 1945. Under Japanese colonial rule Korea was to supply foodstuff and raw materials for the Japanese economy. Therefore the Japanese invested in irrigation facilities, mainly in the South, and in mining, mainly in the North. An extended railroad system, ports, and a communication network were also built by Japan. These facilities, however, were geared towards Japanese trade and military purposes. Because of the location of the major coal and ore deposits, the proximity to Japan and the bridge-position to Manchuria the main industrial establishments for a limited production of iron, steel, cement, chemical fertilizer and oil were situated in the North-East of Korea, with only some light industry established in the South. Thus the DPRK inherited the lion's share of the existing industries in 1945⁶. But this legacy was seriously depleted when the North Koreans received it. The Japanese had monopolized all technical and managerial positions. When they left in 1945 they took all the plans and other know-how with them, and there was hardly anybody to run the factories.

A consideration of the comparability of present North and South Korea cannot be confined to conditions in the base year 1945, when separate development began. Later outside influences on their respective evolution, most importantly the impact of the Korean War and the input of foreign aid on both sides, must also be examined. The Korean War brought devastation to almost all parts of the Korean peninsula. But most destructive was the onesided bombing which the US air force inflicted on the cities and industrial centers of the North⁷. Damage of industrial installations in the South were not as devastating as in the North although Seoul, which changed its occupants four times, was heavily destroyed⁸. Human

⁵ Park, Byong-Ho, *Natural resources and Industrial Locations in South and North Korea*. In: International Conference on the Problem of Korean Unification, Report. Seoul: Asiatic Research Center, Korea University, 1971, 476–513, p. 478. A map showing the distribution of mineral resources is found on page 481.

⁶ "In 1940 the North's estimated share of heavy industry production was 86 per cent of the total for Korea. By 1944 it was producing 92 per cent of the total electric power, 88 per cent of the fuel, 78 per cent of the mineral output, 98 per cent of the metallurgical output, and 82 per cent of the chemical output."

Shinn, Rinn-Sup and others, *Area Handbook for North Korea*. Washington D. C.: U. S. Government Printing Office, 1969, p. 295.

⁷ "Heavy industrial establishments (in the North) ... were reported completely destroyed. Power production in 1953 was 26 per cent of the 1949 level; fuel, 11 per cent; metallurgical output, 10 per cent; and chemicals production, 22 per cent. The value of gross industrial output in 1953 was only 64 per cent of the 1949 amount."

Area Handbook for North Korea (see footnote 6), p. 297.

⁸ "Agriculture production (in the South) dropped 27 per cent from 1949 to 1952; the overall GNP dropped 14 per cent in the same period."

David C. Cole and Princeton N. Lyman, *Korean Development: The Interplay of Politics and Economics*. Cambridge: Harvard University Press, 1971, p. 22. — The two figures quoted lead to the conclusion that the drop of industrial production must have been below 10 per cent.

casualties were heavy on both sides. In addition, there was a mass migration of one to two million people from the North to the South during and after the war. It caused an acute labor shortage in the DPRK and an immense refugee problem in the ROK.

After the war, both sides received considerable amounts of economic and technical aid from their allies. Data on the amount of aid received by North Korea vary greatly. The DPRK has announced a figure of 500 million rubles or 550 million dollars of post-war assistance⁹. Western sources estimate Soviet, Chinese and East European aid to the DPRK between 1949 and 1962 at over 1 billion dollars, including loans¹⁰.

Aid to South Korea was much greater. According to ROK sources, grant aid which the ROK received under various programs directly or indirectly from the United States (UNKRA, Public Law 480, AID) amounted to 2.78 billion dollars for the years 1951–1962¹¹. While the DPRK, according to available information, received no more assistance after the mid-sixties, economic aid to the ROK continued on a large scale, grant-type aid gradually being replaced by loans since 1966. The ROK received a total of approximately 4.5 billion dollars in economic aid to 1970¹² plus 3 billion dollars in loans and investments (1959–1970)¹³. Military assistance (not known in its size for North Korea) officially amounted to 2.9 billion dollars for South Korea to 1970¹⁴; it is not considered in these figures.

In summary South and North Korea share a common ethnic, cultural and historical experience until 1945. They are geographically about the same size, the Northern half containing more mineral resources while the Southern half is more favorably endowed in agriculture. Since most of the Japanese industrialization in Korea was located in the North, the DPRK had an advantage when the separate development began in 1945/1948. However, this advantage was lost during the Korean War which brought more devastation for the North, and it was reversed by postwar aid and economic assistance which was at least seven times higher for the ROK

⁹ Kim Il Sung in his lecture at the Ali Archam Academy in Indonesia in 1965. Kim Il Sung, *Selected Works*, vol. IV. Pyongyang: Foreign Languages Publishing House, 1971, p. 233.

¹⁰ *Area Handbook* (see footnote 6): 1.37 billion dollars (p. 369). Chung Chin Oowye. *North Korea's Attitude in the Sino-Soviet Dispute 1958–1967*. University of Nebraska dissertation, 1969, quotes figures for the time until 1957 which amount to 945 million dollars (pp. 34–42). Kim Uoong Tak, *Sino-Soviet Disput and North Korea*. University of Pennsylvania dissertation, 1962, quotes 1.285 billion dollars for all grants and loans for the period 1945–1962 (p. 204).

¹¹ *Korea Statistical Yearbook 1970*. Seoul: Economic Planning Board, Republic of Korea, 1970. See table 228.

¹² *Korea Statistical Yearbook 1970*, table 228 sums up to dollars 4,037 million for the years 1948–1969. The *Korea Times*, Seoul: November 22, 1970, published a total of dollars 4,881 million. While US official sources report a total of dollars 7,460 million minus dollars 2,900 million military assistance, i.e. dollars 4.5 billion. *United States Security Agreements and Commitments Abroad, Hearings before a US Senate Subcommittee (Symington Hearings)*. Washington D. C., 1970, p. 1562.

¹³ *The Korea Times*, Seoul: January 24, 1971.

¹⁴ In the *Symington Hearings* (see footnote 12), p. 1562, the total of 2.9 billion dollar in military assistance is quoted for the time until 1970. A later US Senate source, however, gives a total of 5 billion dollar for the 1949–1971 period. A Staff Report, committee on Foreign Relations, United States Senate, *Korea and the Philippines*: November 1972. Washington D. C.: U. S. Government Printing Office, 1973, p. 24.

than for the DPRK. In the overall balance, the advantages and disadvantages of the two parts of Korea were roughly equal. I believe there is no major factor that invalidates a direct comparison of the present situation in the Democratic People's Republic of Korea and the Republic of Korea.

2. Economic Comparison of North and South Korea

Overall Indicators

Most common in international economic comparison is the use of **Gross National Product** (GNP) figures. But there are a number of problems involved. First, socialist countries do not use those GNP aggregations which are common in all capitalist and most other non-socialist economies.

The standard definition says: GNP is the total value of all end-products and services produced during one year within a respective national economy (GNP at Market Prices). National Income (NI) is the total of all incomes received by all factors in production and services during one year. (Net National Product at Factor Cost.)

Socialist economists, however, add the output values of all separately enumerated production units. The Gross Output Value of Social Production (GVSP) includes also the values of intermediate products which are material costs for consecutive production units, thus their value is counted several times. This problem does not exist in the socialist definition of National Income (or Net Product). "National Income... represents the sum of net product (values added) of all separately enumerated branches of the economy, and therefore equals GVSP minus all material costs including depreciation of capital."¹⁵ This comes close to the capitalist definition of National Income. However, socialist national accounting does not consider so-called non-productive services such as administration, education, health care, passenger transportation, military etc.

Therefore overall indicators of capitalist and socialist economies cannot be directly compared unless values are adjusted.

There is a second major difficulty involved in GNP comparison: local currency values must be transformed into internationally comparable currencies, usually the US dollar. But exchange rates are rather arbitrary, a result of international market conditions and political and economic decisions. For example, it is widely assumed that South Korea's official exchange rate (316 won to a dollar at the end of 1970) is far too low. That rate is maintained because South Korean imports are very much higher than exports so that a devaluation is considered to be disadvantageous. On the other hand, the exchange rate North Korea has to use in trade with Japan (2.57 Won to a dollar) seems to be too high. (Here and in the rest of the article we write won for the South Korean currency and Won for the North Korean.) The DPRK government claims an exchange rate of 1.2 Won to the dollar, and a well based estimation of a Western scholar arrives at 1.66 Won to a dollar (see below). Needless to say, such variations in the exchange rate have a decisive bearing on GNP or national income figures when they are expressed in US dollars and renders them almost meaningless, if the exchange rate used is not mentioned. This is the case with most estimates of North Korea's GNP published occasionally in the West¹⁶.

¹⁵ For these definitions see Lee, Pong S., An Estimate of North Korea's National Income. In: *Asian Survey*, XII/6 (June 1972), 518-526, p. 519.

¹⁶ *Korea Focus* (a quarterly published in New York), II/1 (February 1973), p. 58, mentions

The same difficulties, of course, exist for a comparison of Per Capita National Income. Additionally, we do not have exact population figures for North Korea and estimates vary between 13 and 14 million for the year 1970. However, again and again Per Capita NI figures are used (or misused) to indicate a nation's economic strength or weakness, success or failure. It is as if all countries were participating in an international high jump competition. So we may not completely neglect this indicator.

Pong S. Lee has estimated North Korea's National Income on the basis of the (very rare) absolute value data in a DPRK government program announcement in December 1967. Per Capita NI was reported as 500 Won in 1966¹⁷. For the crucial question of exchange rate, Lee used the Purchasing Power Parity between the Won and the Polish zloty and the latter and the US dollar. He arrived at a Purchasing Power Parity of 1.66 Won to one dollar. On basis of this parity, North Korea's National Income Per Capita in 1966 was 300 dollars¹⁸. South Korea's Per Capita GNP in that year was 131 dollars as calculated at the artificially high official won-dollar exchange rate of that time¹⁹.

If we assume that North Korea's population increased by roughly 3 per cent annually and that the NI grew by an average rate of 9 per cent²⁰, North Korean Per Capita National Income was 375 dollars in 1970²¹. South Korea's per capita GNP for the same year was 252 dollars, as calculated from the GNP at current market prices and the won-dollar exchange rate at the end of 1970 (which was 316 won as compared to 271 won in 1965 and 1966)²². This exchange rate, however, was certainly overvalued and did not reflect the high inflation during these years. This becomes apparent if we express the 1970 South Korean GNP at 1965 constant market prices with the 1965 exchange rate. Then the 1970 Per Capita GNP is only 164 dollars.

It must be remembered, however, that the socialist national income definition excludes most of the services. Therefore we need further adjustments to reach a somehow meaningful basis for comparison. (Because of the availability of statistical data it is easier to adjust the South Korean GNP figures to the North Korean National Income aggregation than vice versa²³. In 1970 service industries and social overhead capital contributed 42 per

a World Bank estimate of \$280 per capita GNP for 1969; this would mean a \$3.7 billion GNP on the basis of a 13.3 million population estimated for the same time.

Korea Week (a biweekly paper published in Washington D. C.) V/21, quotes a US government agency as reporting \$4.5 billion for the DPRK's GNP in 1970 and a per capita GNP of \$317 (which means a population estimate of 14.2 million!).

¹⁷ Kim Il Sung, *Selected Works* (see footnote 13), IV, p. 549.

¹⁸ Lee, P. S. (see footnote 15), p. 524.

¹⁹ This and the following per capita GNP figure for 1970 are my own calculations based on GNP, population and official won-dollar exchange rate data as given in *Economic Statistics Yearbook 1972*. Seoul: The Bank of Korea, 1972, tables 4 (I), 2 and 136. We used the higher GNP instead of the lower NI figures because the former include indirect taxes like the socialist NI.

²⁰ Chung, J. S., *The Six Year Plan of North Korea* (see footnote 2), p. 21, gives an estimated annual average growth rate of 8.9 per cent for the years 1961–1970 based on official DPRK data.

²¹ This is my calculation, using the same Purchasing Power Parity as in 1966 since there is no inflation in the DPRK.

²² The ROK government has frequently given the 1970 per capita GNP as 223 dollar (and \$252 for 1971). But this figure and the official GNP (2,546 billion won at current market prices), population (32 million by 1970 year end), per capita GNP (81,800 won), and exchange rate (316 won per one dollar by 1970 year end) data are internally inconsistent (the same is true for 1971). See e.g.: *Economic Survey of the 1971 Korean Economy*. Seoul: Economic Planning Board, 1972, p. 4. The calculation of the official GNP per capita in dollars remains unclear. I have used my own totals which incidentally are more favorable for the ROK.

²³ There is no way to estimate how much North Korea's tertiary sector would contribute to a

cent to South Korea's GNP (without construction and electricity which are included in the socialist National Income calculation)²⁴. Some of these services might partially be considered "material production" in North Korea. Therefore, if we reduce South Korea's GNP by 33 per cent, it might correspond approximately with the North Korean National Income calculation.

Thus North Korea's 1970 Per Capita NI of 375 dollars corresponds with 110 dollars for South Korea (based on the socialist definition of National Income and the above mentioned exchange rates). This means that in 1970 South Korean economic output per person was less than one third of North Korea.

Although hopefully the above comparison is as fair as possible we must bear in mind that GNP and Per Capita National Income figures are only rough indicators of economic development and achievements.

Growth rates are more relevant for comparative analysis. The DPRK has published much more of such relative data than absolute monetary values. The data can be compared with South Korean growth rates without raising the exchange rate problem or the question of different aggregation.

To understand the present wide gap in the economic achievements of South and North Korea we must consider the economic development processes since 1945. Particularly in those early years before and after the Korean War the North Korean economy enjoyed incredibly high growth rates. National Income grew annually at rates between 20 and 40 per cent, scoring an average rate of 22.1 per cent for the period 1954 to 1962²⁵ or 14.8 per cent for the entire period 1947–1960, including the war years²⁶. During the same time South Korea's GNP had growth rates between 1 and 9 per cent, reaching an average of a mere 4.7 per cent for the years 1954–1962²⁷.

In the sixties North Korea's economic growth slowed markedly to an annual average of 8.9 per cent for the (extended) Seven-Year Plan period (1961–1970)²⁸ while South Korea reached record growth rates of 13 and 16 per cent in the late sixties, achieving an annual average of 9.3 per cent for 1961–1970²⁹. Thus the extreme contrast in economic growth rates between North and South Korea ended in the sixties. Their respective rates became almost even — on a high level if compared to other developing countries.

The key factor in the rapid growth of the North and South Korean economies was of course, the growth rate of the industrial sector. In Western literature it has often been argued that North Korea's particularly impressive data on the

capitalist GNP aggregation. Certainly trade, banking and hotel services are far less than in South Korea where they are overdeveloped. On the other hand, the DPRK's education, health service, and defense sectors very likely employ relatively more people than those of the ROK.

²⁴ This surprisingly high percentage is calculated from Economic Statistics Yearbook 1972 (see footnote 19), table 5.

²⁵ Kuark, Yoon T., *Economic Development Contrast between South and North Korea*. In: Chung, J. S., ed., *Patterns of Economic Development: Korea*. Kalamazoo, Mich.: Korea Research and Publication Inc., 1966, 145–200, p. 168.

²⁶ Chung, J. S., *The North Korean Economy* (see footnote 1), p. 248.

²⁷ Calculated from Economic Statistics Yearbook 1972 (see footnote 19), table 16.

²⁸ Chung, S. S., *The Six Year Plan of North Korea* (see footnote 21), p. 21.

²⁹ See footnote 27. Growth rates for this period probably are too high official inflation rates being too low. Furthermore, during the late 1960s GNP growth rates became the primary focus of government propaganda at home and abroad.

increase of industrial output must be overstated. In an article entitled "Overstatement of North Korean Industrial Growth, 1946—1963"³⁰ Pong S. Lee, checked the claimed growth rates. Ironically, his results proved the DPRK government's claims were essentially correct³¹. Thus we may use these growth rates, unbelievably high as they are.

Annual growth rates for Gross Industrial Output in the DPRK were 49.9 per cent for the years 1947—1949 (post-liberation reconstruction), 41.8 per cent for 1954—1956 (post-war reconstruction), 36.6 per cent for 1957—1960 (shortened Five Year Plan period) and 12.8 per cent for 1961—1970 (extended Seven Year Plan period). While the postliberation and post-Korean War growth rates are extremely high probably due to exceptionally low and incomplete base figures, the average annual industrial growth for the entire period 1954—1970 was 23.5 per cent, still very impressive³².

Corresponding growth rates for South Korea, i.e. those of the mining and manufacturing industries' sector, were markedly lower. For 1954—1958: 15.1 per cent; 1959—1961: 7.2 per cent; 1962—1966 (the First Five Year Plan): 14.8 per cent; 1967—1971 (the Second Five Year Plan): 20.9 per cent. The average industrial growth for the entire period 1954—1971 was 15.3 per cent³³.

But rapid growth of industrial production alone does not result in a satisfactory increase of National Income. If the agricultural sector lags too far behind it can severely retard overall growth as long as its contribution to the country's GNP is 30, 50 or more per cent as it is the case in most developing nations. Therefore, the growth rates of agricultural output can be just as decisive for a nation's economic development as the industrial growth. The average annual growth rates for the DPRK's Gross Agricultural Product were 10.0 per cent for 1954—1960 and 6.3 per cent for 1961—1970³⁴. These were very high rates for the rural economy which had much less growth potential than the manufacturing industries.

The ROK's corresponding rates are 2.7 per cent for the 1954—1960 period and 4.4 per cent for the decade thereafter³⁵. The low South Korean average rates are composed of relatively high rates in alternation with significant negative growth rates. This indicates the high dependency of the South Korean agriculture on weather conditions and reflects a lack of modernization in the agricultural sector.

Because of their higher speed of growth the industries' share of overall production usually increases significantly in the course of a country's industrialization, while the relative contribution of agriculture to GNP declines. Therefore the composition of GNP is often taken as a measure of economic development. Unfortunately, we do not have such data for the DPRK in recent years. But I doubt the usefulness of this indicator. South Korean agriculture's surprisingly low share of the GNP (24 per cent in 1971) must be interpreted not as a sign of advanced industrialization but as a result of the backwardness of the rural sector. The distinction is important.

³⁰ In: *Journal of Korean Affairs*, 1/2, 3—14.

³¹ See his table 2, *ibid.* p. 8.

³² Data compiled from: Chung, J. S., *North Korean Economy* (see footnote 1), p. 248; and Chung, J. S., *The Six-Year-Plan of North Korea* (see footnote 2), p. 21.

³³ Own calculations based on *Economic Statistics Yearbook 1972* (see footnote 19), table 16.

³⁴ Chung, J. S., *The North Korean Economy* (see footnote 1), p. 248; and Chung, J. S., *The Six-Year-Plan* (see footnote 2), p. 21.

³⁵ See footnote 33.

Table 1:

Overall Economic Indicators for North and South Korea

Estimate of National Income*/capita 1970 (US-Dollar)	North Korea	South Korea
Annual average growth rates (per cent)	375	110
National Income or GNP 1954–1962	22.1	4.7
National Income or GNP 1961–1970	8.9	9.3
Gross Industrial Output 1954–1970(71)	23.5	15.3
Gross Agricult. Output 1954–1960	10.0	2.7
Gross Agricult. Output 1961–1970	6.3	4.4

* = Adjusted to socialist definition. For exchange rates see text.

Output Figures of Key Products

The comparison of output data of important products, is increasingly preferred in economics of developing countries to the rather abstract national economic indicators discussed above. Quantitative data on the production of energy, iron and steel, cement, chemical fertilizer, food, textiles, etc., indicate more about an economy's strength than totals expressed in questionable monetary terms. Since the size of a country's working population greatly influences absolute production, there must be an adjustment for population ("per capita output") to make such data comparable between countries.

Fortunately, and as a rare exception, Chairman Kim Il Sung's Report to the Fifth Congress of the Workers' Party of Korea in 1970 contained some per capita production figures. In the following table they are compared with the corresponding figures for South Korea. A few comments will follow.

Energy production and consumption is one of the most important indicators of a nation's stage of industrialization. Industrial production, mechanized farming, modern transportation and communication, and improved living conditions increase a modernizing country's energy demand rapidly. It is somehow difficult to compare North and South Korea in this respect because they have developed different patterns of energy supply. The DPRK inherited hydroelectric power facilities from Japan and has greatly expanded them since³⁶. Further more, North Korea has ample coal reserves. Thus the DPRK relies mainly on electricity and coal for energy. Oil apparently is used only for vehicles, ships, and planes. The ROK, however, did not do much to develop hydroelectric power potential and chose — for questionable reasons — to rely increasingly on petroleum. Although every drop of crude oil has to be imported, the government deliberately reduced the role of coal as a primary energy source. As shown in the following table, there is now a striking contrast between per capita electricity and coal production in North and South Korea. They are four and five times higher respectively in the DPRK than in the ROK. But because of South Korea's use of

³⁶ In 1944 the total electricity production for Korea, mainly from power stations in the North, was about 5,800 million kwh. Park, S. J., *Die Wirtschaftsbeziehungen...* (see footnote 3), p. 77. (In his table 32, however, kwh should read mwh.) It should also be noted that power stations in the North were primary targets of US bombing during the Korean War.

Table 2:

Output of Key Products in North and South Korea, 1970

	North Korea		South Korea	
	absolute	per capita	absolute	per capita
Electricity	16.5 billion kwh	1184 kwh	9.2 billion kwh	286 kwh
Coal	27,500,000 ton	1975 kg	12,394,000 ton	387 kg
Oil	n. a.	n. a.	10,628,000 kl	332 l
Total energy (in coal equivalents)	29,562,500 ton	2112 kg	24,429,250 ton	763 kg
Steel	2,200,000 ton	158 kg	1,276,000 ton	40 kg
Pig iron	n. a.	n. a.	19,158 ton	0.6 kg
	(2,300,000 ton) ^a	(177 kg) ^a		
Cement	4,000,000 ton	287 kg	6,270,000 ton	196 kg
Chem. fertilizer	1,500,000 ton	108 kg	1,300,000 ton ^b	40 kg ^b
Rice	n. a.	n. a.	3,939,000 ton	123 kg
	(3,000,000 ton) ^a	(150 kg) ^c		
Meat	66,000 ton	4.7 kg	109,213 ton	3.4 kg
Textile fabrics	400 million meter	29 meter	373 million meter	12 meter

n. a. = not available

^a = The figure in brackets is the official plan target for 1970. Since the actual achievement was not published, we must assume that it was considerably lower.

^b = Our estimate (see footnote 38, second paragraph).

^c = Our tentative estimate (see the following comments).

Sources:

For North Korea: Kim Il Sung, Report to the Fifth Congress of the WPK, pp. 9-11. Per capita figures, if not mentioned there, are my own calculations on basis of a population of 14 million.

For South Korea: Economic Statistics Yearbook 1972 (see footnote 19) and Economic Survey of the 1971 Korean Economy (see footnote 22). Per capita figures are my own calculation on basis of a population of 32 million.

The sources for the meat data are quoted in footnote 43.

petroleum for approximately half its commercial energy demand, such comparison does not yet present an accurate picture. Following international practice we convert the calorie values of the hydro-electricity and petroleum outputs into corresponding amounts of anthracite coal. The total energy production equals 763 kg of coal per head in South Korea and 2,112 kg in North Korea³⁷. The latter thus is 2.8 times higher than the former, even though we were not able to consider the North's use of oil. This is one of the clearest indications of the great difference in industrialization between South and North Korea.

Iron and steel production figures show a similar pattern. In 1970 steel production in the North was almost double the output in the South, and per capita production

³⁷ The equivalents used in these own calculations are those of UN statistics:

$$1000 \text{ kwh electricity} = 0.125 \text{ ton coal.}$$

$$1 \text{ ton crude oil} = 1.3 \text{ ton coal.}$$

$$(1 \text{ kl oil} = 0.861 \text{ ton oil}).$$

United Nations: World Energy Supplies 1961-1970 (Statistical Papers Series Y 15), New York 1972, p. 4.

Electricity which is generated by oil or coal heated thermal power stations is left out of this energy balance to avoid double counting. The share of hydro electricity (1,218 million kwh = 13 per cent) of South Korea's total electricity production (1970) was taken from Economic Statistics Yearbook 1972 (see footnote 19), table 113. For North Korea, lacking detailed information, we assumed that all electricity was generated by hydro power stations, an assumption which very likely comes close to reality.

was four times higher. Domestic production is not identical with actual consumption. South Korea imports great amounts of steel to compensate her low production. North Korea imports only certain special types of steel and exports approximately an equivalent amount of other kinds of steel. The contrast is greater as far as pig iron is concerned. Since the DPRK's pig iron output for 1970 is not known we must assume that it was considerably below the target of 2.3 million tons. In any case it must be much higher than the South's mere 19,158 tons. Again import had to balance the ROK's deficit, while the DPRK may be considered self-sufficient in iron and steel.

In cement production, an indicator of a country's construction activities, North and South, which both have rich limestone deposits, are more balanced. The ROK has greater total production but in per capita figures the North leads by 50 per cent.

The production of chemical fertilizer indicates the degree of modernization in agriculture and the extent to which a country's industry is able to support such modernized agriculture. For many years the ROK had to import all its artificial fertilizer, but in the late 1960s it became self-sufficient and was even able to export some urea fertilizer. The North had been in a better position due to Japanese-built fertilizer plants. Production per capita in the North in 1970 was 2.5 times higher than in the South. There are great differences in the quality and plant nutrients content of various types of chemical fertilizer. For example urea fertilizer which makes up one half of the ROK's total production is the most valuable. Since we do not know the composition of the DPRK's production total, comparison of these gross output data remains uncertain³⁸.

Unfortunately we do not have exact rice output data for the DPRK. We must assume that the 1970 harvest was so short of the target of three million tons that the government did not want to admit the extent of the failure. (Some other production figures were published although they lay somewhat below the plan target³⁹). We might assume that instead of the planned 230 kg per capita there were only 200 kg per person in the DPRK. According to Scalapino/Lee North Korean rice data refer to unhusked rice⁴⁰. Using FAO standards these figures should be reduced by 25 per cent to make them comparable with South Korea's data

³⁸ For this problem see Scalapino/Lee, *Communism in Korea*. Berkeley, Los Angeles, London: University of California Press, 1972, pp. 1184–1188, with various tables. But the authors' estimate of the 1970 situation is too unfounded (share of urea production in 1970?) to be useful.

South Korea's 1970 official output figure for chemical fertilizers is 589,000 tons (*Economic Survey 1971*, see footnote 22, p. 59). But this concerns fertilizer components only. For 1969 a gross output of 1,191,000 tons is given in *Industry in Korea 1970* (see footnote 37), p. 150. Hence our estimate of 1.3 million tons for 1970. The FAO *Production Yearbook 1971*, Rome 1972, p. 466 and 473, publishes the following unofficial and apparently incomplete data on fertilizer components:

Fertilizer Production 1969/70 (in thousand ton):

	N	P ₂ O ₅
North Korea	157.0	80.0
South Korea	355.8	145.9

³⁹ See Chung, J. S., *The Six Year Plan of North Korea* (see footnote 2).

⁴⁰ Scalapino/Lee, *Communism in Korea* (see footnote 38), p. 1026.

for polished rice. The resulting per capita production of some 150 kg still is higher than the ROK's 123 kg. The South's total production of 3,940,000 tons had to be supplemented with 770,000 tons of imported rice⁴¹ to reach a per capita supply of 147 kg. The North's apparent self-sufficiency in rice is all the more remarkable in view of the fact that in 1945 78 per cent of the paddy land was in the South⁴².

To gain a more complete picture of the supply of basic food items in both parts of Korea we would need data on wheat and barley production or imports in the DPRK, which are not available. According to reports wheat, partly imported in exchange for rice, plays a more significant role in the Northern diet than in the Southern. The South Koreans still have to use great amounts of the less popular but cheaper barley.

For meat and egg production, crucial indicators of the population's supply of animal protein, we have North Korean data for 1969. Beef and pork production was 66,000 tons or 4.7 kg per capita in North Korea, while South Korea's beef and pork output in the same year was 109,213 tons or 3.4 kg per person. North Korea produced 1,130 million eggs or 88 per person while South Korea had 2,430 million or 76 eggs per capital. For soya-beans, another essential source of protein in the Korean diet (which did not include milk until very recently) there is a North Korean figure for 1968: 215,000 tons or 15.4 kg per capita. In that year South Korea had a crop of 245,000 tons or 7,7 kg per person⁴³.

Finally it is interesting to compare the per capita production and supply of textile fabrics, a consumer good and certainly an important indicator of the people's living standard, second only to food data. The overall production of North and South Korea is almost even, 400 million and 373 million meters respectively. However, the DPRK's per capita production is 2.5 times higher. It must be further considered that almost half of the ROK's textile fabrics production (45 per cent) is exported, while probably all of North Korea's production is available for domestic consumption.

Conclusion

Notwithstanding the possible inaccuracy of particular data from the DPRK or the ROK, the trend of this North-South comparison is evident. In all but one of the industrial output categories the DPRK has the lead over the ROK, even in absolute terms. If expressed in per capita data the North Korean energy production in 1970 was at least 2.8 times higher than the South Korean, steel production 4 times, pig iron more than 100 times, cement 1.5 times, chemical fertilizer 2.5 times, rice production about 1.2 times, and textile fabrics 2.5 times.

It must be conceded, that only those data were available which the DPRK chose to publish, which all are favorable for her. Yet the data cover almost all the products indicative of the degree of industrialization and a country's economic potential.

⁴¹ Economic Statistics Yearbook 1972 (see footnote 19), p. 282.

⁴² Park, S. J., *Die Wirtschaftsbeziehungen* (see footnote 3), p. 46.

⁴³ North Korean data of this paragraph from: Statistisches Bundesamt, *Länderkurzberichte: Nord-Korea*. Wiesbaden: 1971, p. 14, which uses FAO statistics. South Korean data from: Industry: Korea Background Series. Korean Overseas Information Service, Seoul, 1972, p. 20.

Transportation and communication data, which also are important indicators, unfortunately are not available from the DPRK. One might object that we did not consider the output of consumer goods (such as electric appliances, private cars, watches, radios and TV sets), where the South Korean economy very likely is superior. If such data were included, it would also have been necessary to compare production figures for the machine building industry, where the North is far more advanced. The comparison of Per Capita National Income, which in 1970 was 3.4 times higher in the DPRK than in the ROK, is confirmed by the trend of all other data collated.

Limitations of space do not permit an analysis of the reasons for the differences observed. But if nothing else, the statistics show that the DPRK, and particularly her development strategies and principles of economic organization, deserve much more attention than they have received so far in capitalist countries. "Third World" countries have been aware of the DPRK's development achievements for several years now. They have been particularly impressed by the fact that this small country with its 14 million people is developing mainly by its own efforts. While the ROK received tremendous amounts of foreign aid the DPRK has received very little, if any, outside assistance, since the late 1950s. It thus demonstrated that its central ideology *chuch'e* (self-reliance) seems to be a viable and successful development principle.

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