# Outward-Looking Approach to Economic Development*

Choong-Shik Choi**

## I. An Analytical Framework

Korea has made very impressive economic growth during the 1960s with the 8.3% average rate for the First 1962-66 Plan period and the 11.4% for the Second 1967-71 Plan period, which exceed the target growth rates of 7.1% and 7.0% for the respective Plan. As a result, the level of GNP for 1971 is about 2.5 times higher than the level in 1961.

The main contribution towards this achievements was made by industrial sector which has increased by about 18% (or about 22% excluding mining subsector) a year since 1962. Indeed, by all measurements of development performance the industrial sector, to be specific, the manufacturing sector has taken the lead in the overall development and worked a "spread-effect" transformation on the structure of the Korean economy.

Once we come to the evaluation that industrialization deserves to be accorded a key place in the credit for Korea's rapid development, that is, development led by industrialization, our deductive logic takes us to the next question, "Industrialization induced by what?" This inquiry is directly related to the nature of the strategy and the policies that Korea has chosen in its pursuit of industrialization.

* This paper is primarily concerned in the context of the topic with an analytical framework, the performance of Korea's foreign trade sector in the 1960's, and a simple trade gap projection for the Korean economy to 1980. And it is made up from a portion of author's dissertation presented to Columbia University.

My special thanks are due on this occasion to Professor Ronald E. Findlay of Columbia University, who was originally responsible for my undertaking the research work, "A Study of the Structual Change in Developing Country's Industrial Growth : the Case of Korea," and his most excellent and efficient guidance can hardly be overappreciated.

**The author is a part-time instructor in economics, College of Commerce, Seoul National University, and the planning economist of Agency for Defense Development, Republic of Korea.

The inquiry draws our attention straight to the rapid expansion of Korea's industrial output in the 1960s; industrial sector has grown in such a rapid, but disproportionate rate that Korea saw an "unbalanced" structure in the intersectoral terms. Putting it differently, the rate of growth of industrial sector has exceeded that of domestic demand. Then, an excess of supply over its domestic demand should have been taken care of somewhere in the economic system. In the case of the Korean economy, it has been borne in great measure by the export expansion. Perhaps the following quantitative results would suffice at the initial stage of discussion to back up the drastic expansion of exports: total exports which amounted to about $42.9 million in 1961 increased at an average annual rate of over 41% during 1962-71, reaching $1,352 million in 1971, an increase of about 32 times, and about 86% of total exports in 1971 comprised manufactured products compared with 22% in 1961; the ratio of increase in manufacurting exports to the increase of gross value added in manufacturing sector has increased from less than 40% in 1962 to 79% in 1971.

The unusual export expansion made in the 1960s marked a distinct departure from the pattern prevailed in the 1950s. It is recalled that Korean government during the Rhee regime identified economic development with the reunification of Korea because of the separation of South Korea from the North where much of the pre-World War II economic capacity was located, and that the strong nationalistic motivations put high premium on a self-sufficient or intensive import-substitution method of industrial development. As a consequence, the Korean government was not to build up the South as an integrated and a viable economy, and the industrialization process was extensively protected in domestic markets with export promotion being very much neglected. But with the passing away of the Rhee regime, it was recognized that the desirable reunification could never precede the development of an economically strong South Korea and that maximum resource mobilization and efficient allocation of investment projects would be alien to an uneconomic

or political considerations. Hence, the New Republic of Korea government made very positive response to the challenge of its leadership with the national priority given to the economic development, the strategy of which has reflected "development led by industrialization" and "industrialization induced by exports." In retrospect, it was a keen insight into the nature of economic conditions surrounding Korea.

Early in the 1960s, Korea was in fact faced with unfavorable external factors; the gradual reduction in U.S. assistance and the change from relief assistance to development loans. This was a harsh blow to be dealt with, considering that the U.S. grant-type aid had been the most important factor in the external economy of Korea. Such a blow awakened the Korean government and the business circles to the need for advancing into the overseas market for foreign exchanges. And the Korean government perceived that the economic development would necessitate an increasing demand for imports and that export expansion could be effective means to meet this problem, reasoning that export earnings could alleviate trade deficits and a successful export indicator would not only develop a favorable environment for the inducement of foreign capital but also attract direct investment of foreign capital.

Fortunately, there were many economic conditions "conducive" to Korea's pursuit of export-oriented industrialization, namely, the accumulation of excess manufacturing capacity especially in the light manufacturing industries, limited natural resources and small-scale domestic market, few traditional exports, complementarity of foreign aid including imports of surplus agricultural commodities under U.S. PL480 with agricultural production(the effect on trade was to by-pass the normal stage of specialization in primary exports), the nearby outstanding example of Japan's industrialization primarily through the development of labor-intensive manufactures for export to the advanced countries. The cognizance of these economic conditions was taken in the early sixties, and it was realized that, given the basic conditions of the

Korean economy, the key to industrialization or expanding its total national product was to be found in expanding the volume of its exports.

But it should be noted here that there was also the sufficient condition as equally important as the necessary cognizance for the realization of export-oriented industrialization. The sufficient condition was the existence of strong political and institutional framework which could exploit impulses to expansion in the export sector. The leadership and personal involvement of President Park injected dynamism into the export drive and influenced the social and economic climate of the country to progress toward export expansion via export pressure. "The president took a strong personal interest in export expansion and was primarily responsible for continuously elevating the targets. He held monthly meetings to review the progress of the export drive and to ensure that no administrative obstacles impeded export growth. Procedures were simplified; special consideration was given to exporters who were having difficulty filling their orders; and embassy staff abroad, up to and including the ambassadors, were pressed into service as export-promotors. Briefly, all part of the Korean government apparatus that could be of any help were recruited for the export drive. The political leadership made it clear that performance would be judged on what an individual or an agency had contributed to the growth of exports. In a relatively authoritarian achievement-centered bureaucracy such as Korea's, these can be powerful stimuli."(1)

We have indicated that the Korean economy put the necessity to manufacture for export in the forefront of its development strategy, and as a result, reflected the structure of development led by industrialization and industrialization induced by exports. This implies that industrialization as a prime mover in the process of economic growth and exports as an "engine" of

(1) D.C. Cole and P.N. Lyman, *Korean Development*(Cambridge: Harvard University Press, 1971, pp. 190-191) Monthly meetings mentioned in the quotation are officially titled, "The Conference on Export Promotion." This meeting chaired by the President himself is attended by ministers, officials, business leaders and professors, in which the progress in the export schedule is reviewed, problems are discussed, and very often some policy decisions are made on the spot on an *ad' hoc'* basis.

growth have surely heralded modernization to Korea in the 1960s.

Our discussion from now on will be directed toward, first, implications of outward-looking and inward-looking approaches within the framework of the moving-up process of industrialization, which is designed to shed light on the interweaving relationship between the two and will provide at a later stage a useful guide for the evaluation of the Korean experience, secondly, analysis of Korea's export performance in terms of change in the commodities and markets, thirdly, the effect of export growth on the balance of payment as is revealed in the relationship between exports and imports, fourthly, the import structure, and finally, problems and prospects in relation to the improvement of balance of payments.

That underdevelopment may be defined as lack of industrialization and development can be identified with industrialization is very often taken for granted in the literature on economic growth and development. In fact, many a developing countries have struggled with the transformation of their economic structures into industrialization. And we also know that many development strategies have competed with each other for an effective and efficient solution to attaining industrialization. This is true whether we speak of the role of the "capital-output ratio" in the growth process, the "big initial spurt," the "take-off," the "minimum critical effort," the unlimited supplies of labor," the "balanced" or "unbalanced" growth, or the "foreign exchange gap." While each of the strategies differs in terms of what it selects as the primary obstacle to the industrialization process in developing countries, all have proposed industrial development through import substitution.[2]

As the recent experience of developing countries has shown a marked difference in their economic growths, however, alternative approach to import-

(2) The doctrines of the sufficient capital requirement, the balanced and unbalanced growths, and the foreign exchange constraint are briefly discussed and are related to import-substituting industrialization in A. Murakami, "Two Aspects of the Export of Manufactured Goods from Developing Countries," *The Developing Economies*, Vol. VI, No. 3(September, 1968), pp. 262-264.

substituting industrialization has been offered. That is "export-oriented" industrialization with an emphasis on production for the export market. For example, Professor Myint, in his study of the development patterns which have taken place in Southeast Asia, has pointed out these alternative development paths and characterized them as "inward-looking" and "outward-looking," in terms of their negative and positive response to the existing opportunities for participating in international trade and investment.(3) Furthermore, he maintains that a policy for outward-looking industrialization is the most promising thing for the Southeast Asian countries with their relatively small internal markets. Even those specializing in other developing areas of the world have come to appreciate and even advocate the importance of export expansion, usually through their serious reflections on the defects and limitations of inward-looking(or import-substituting) industrialization and through their observations of the successful performance of the developing countries which have adopted an outward-looking(or export-oriented) development policy. It should be noted in this connection that the desirability of and preference for export-oriented industrialization has been overemphasized out of proportion in the literature to the point where import substitution approach might be considered to have carried a built-in anti-industrial progress bias. This "wholesale" prevalence brings a sense of qualm at least to those who see the industrialization process in structural perspective on a long-term time-series basis.

Professor Findlay has correctly stated in this context that "From the simple inward-outward looking dichotomy it would appear that formula for economic success in the region is for the inward lookers to join the outward lookers and since Indonesia has apparently done precisely this a mechanical application of this view should lead to optimism about the seventies for the region as a whole. Our earlier discussion has been intended to show that this would

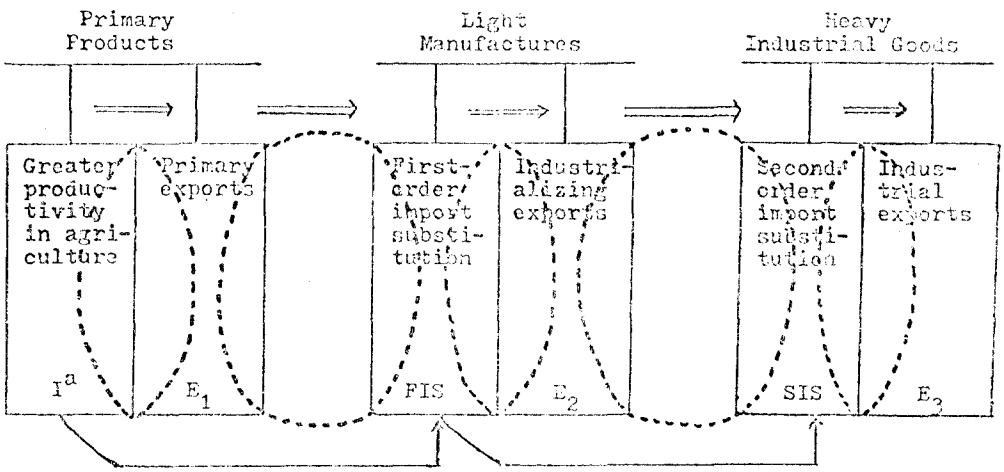
(3) H. Myint, "The Inward and Outward Looking Countries of Southeast Asia," *Malayan Economic Review*, Vol. XII, No. 1(April, 1967), pp. 113.

be far too simple a view."[4] Truly we cannot be swept away by a seemingly sweet argument for export-propelled industrialization, however much advantages it contains. The choice of a strategy is more than an academic exercise. Each developing country has its unique constraints in the process of the industrial progress that circumscribe the range of its alternatives. Among the more obvious restrictions are the existing level of economic and industrial development, the available human and physical resources and the institutional setting in which the process of growth occurs. Therefore, the extent to which emphasis should be placed on export-oriented industrialization must be determined by the givens for each developing economy, especially by the stage of industrial growth achieved by the country. Furthermore, my argument is that the two broad strategies of industrialization are not alternatives open to all developing countries. Rather, they are sequential to and complementary with each other in the long-term growth process. The discussion to follow shortly is to clarify itself to this point. For this, a simplified diagram illustrating the moving-up process of industrialization is presented below, around which our discussion will be organized.

It is widely accepted that in the initial transition from a stagnant and agro-based country to a rapidly developing one, interactions between agricultural and industrial sectors are at the core of the development process. Explicit analysis of these interactions has been done at great length in the development literature.[5] Here I simply intend to point out that the surplus of agricultural goods available through labor reallocation and substantial

(4) R.E. Findlay, "Implications of 6% Growth in the 1970s for Southeast Asia," *Columbia University Conference on International Economic Development*, Pearson Conference Document No. 18(February, 1970), pp. 15.

(5) Significant and classic are W.A. Lewis, "Economic Development With Unlimited Supplies of Labour," *The Manchester School*, Vol. XXII, No. 2(May, 1954), pp. 139-91, and also "Unlimited Labour: Further Notes," *Ibid.*, Vol. XXVI, No. 1(January, 1958), pp. 1-32; J. C.H. Fei and G. Ranis, "Innovation, Capital Accumulation, and Economic Development," *American Economic Review*, Vol. LIX, No. 2(June, 1963), pp. 283-313. Also significant is an empirical study by G. Ranis, "The Role of the Industrial Sector in Korea's Transition to Economic Maturity," *Center Discussion Paper* No. 125 (New Haven: Yale University Economic Growth Center, October, 1971).




Note: The dotted circles drawn between attached or adjacent blocks signify an overlapping (simultaneous) operation on the part of neighboring stages, that accompanies the continuous(not discrete) transition. For example, the circle between FIS and $E_2$ implies that the basis of the latter is incorporated within the framework of the former industrialization, and likewise the former process is continued until its completion within the latter framework.

increases in agricultural productivity could be turned into a major contributor to the growth of the industrial sector during the initial import substitution stage indicated as FIS in the Figure, usually in terms of its contribution to foreign exchange resources, the economy's saving fund and the continued availability of cheap labor. The natural graduation starts with the task of organizing surplus labor force to produce greater productivity in agriculture, and eventually to follow neoclassical growth rule and to raise an increase in per capita income which leads to a change in the structure of aggregate demand towards various industrial products. These industrial products can be met by imports which are feasible with the foreign exchange earnings from the exportation of traditional raw materials. However, as the domestic market grows large enough to warrant the domestic production of previously imported finished consumer goods, here comes the necessity for first-order import sub-

stitution. In other words, initial stage of industrialization comes to the fore by the process of import substitution of consumer goods for which there has been already an assured market developed by the very imports to be substituted and which are undertaken with known processes.

An important thing to be added in this context is that greater productivity might force the economy to proceed along two extreme paths through the induced static comparative cost principle; as a result of a comparative disadvantage in the industrial sector, a high degree of specialization in primary production at one extreme, and an inclination toward more autarky at the other extreme. The former path was obvious one during the nineteenth century pattern of world trade, and the latter was motivated by the objective of domestic industrialization, as was revealed in the experience of many socialist countries.

Turning to first-order import substitution, we then come to such related questions as "How much substitution?" and "For how long?" These are directly concerned with the industrialization deepening process. To be specific, the first question is addressed itself with whether the scope of import substitution would be confined to the manufacture of finished or semi-finished consumer goods or should be stretched far to the higher stages of manufacture (SIS), that is, to industries producing intermediate products and machinery which have considerable forward and backward linkage effects, and the second one with the efficiency of import substitution.

First of all, it would not be realistic to believe that developing countries with their own resources can enter into the production of more sophisticated branches of industry on equal terms with their competitors in advanced countries. Moreover, overemphasis on import substitution can often lead to the spread of productive resources over a wide range of industries, new industries which are limited to be domestic market and whose opportunities for expansion are accordingly limited. Faced with these restrictions, economies based on large-scale production and the efficient techniques associated with mass

marketing cannot be introduced. Therefore, it would be unreasonable to continuously pursue import substitution industrialization all the way to the second-order stage.

Under this constraint, it is required that the first-order import substitution should be fully explored in a "qualitative" way. It is for efficient and intensive restructuring what the moving up to the first-order stage through greater productivity in agriculture and primary exports represents for "quantitative" or "extensive" transformation. New industries, set up behind tariff walls during the initial industrialization process, cannot be presumed to have attained high productivity of resources as well as to have produced light manufactured goods of sufficient quality. This task remains to be completed, and should receive more attention before anything else. If the import substitution itself has gone as far as to be reasonably efficient and the production capacity has grown too large for the domestic market, then outward opportunities for import substituted industries would arise. In this way, first-order import substitution plays out its assigned role in structural development sense, and industrializing exports ($E_2$) assume the linking catalyst between first-order and second-order import substitution industrializations.

To be sure, the export of manufactures makes it possible to achieve economies of scale through the better utilization of domestic capacity and to create a sufficient demand to warrant the dometic production of previously imported inputs, and also to earn the foreign exchange needed for import requirements. As exports continue to be expanded, the higher import substitution is to be induced. Eventually this higher stage will be matured and give birth to industrialized exports ($E_3$).

We have outlined the entire spectrum of industrialization process from I and $E_1$ through FIS, $E_2$ and SIS to $E_3$ to shed light on the interweaving relationship between import-substitution and export-oriented industrializations not in the least to develop any typical pattern of structural development. I should have been made clear that a strategy of import substitution base

on the utilization of domestic resources can be equally characterized as outward-looking if the import substitution itself is reasonably efficient as it should be. In long-term structural perspective, import substitution and a certain degree of protection for new industries is a normal and indispensable phase as is the case of FIS and SIS, although continuous import-substitution deepening should be avoided. Of course, manufacturing for exports should be encouraged to permit the establishment of larger industrial units with economies of scale, provide access to scarce foreign exchange resources, and give new momentum to industrial development. But a lopsided emphasis on it would not constitute economic development, at least in the eyes of structuralists. Progress in outward-looking or export-oriented industrialization should be made in complementarity with and sequence to import-substitution industrialization, and obviously depends upon a country's resource endowments, the existing structure of production, the available industrial skills, and the time required to bring about the necessary change.

## II. The Performance of Korea's foreign Trade Sector

The experience of the Korean economy and its prospects can be better understood and discussed within the framework of the moving-up process of industrialization. Clearly the Korean case saw the switch from FIS to $E_2$ in the early sixties, avoiding the deepening process from FIS to SIS that had been attempted in the fifties. Table 1 below elucidates Korea's stage of industrializing exports based on light manufactured goods.

Korean exports have grown at an accelerated pace from $54,813 thousand in 1962 to $835,185 thousand in 1970. The rapid growth was accompanied by a significant change in the composition of exports. In 1962, primary products accounted for 73% of total exports, but sharply declined to 16.4% in 1970, whereas manufactured goods increased from 27% to 83.6% over the same period, of which well over four-fifths has constituted those of labor-intensive light industry with the biggest increases in clothing, wigs, plywood

**Table 1. Export Structure, 1962-70**

| | 1962 | 1966 | 1968 | 1970 |
|---|---|---|---|---|
| Total exports(Thousand US dollars) | 54,813 | 250,334 | 455,401 | 835,185 |
| Composition(%) | | | | |
| Agricultural products | 23.0 | 9.5 | 4.3 | 3.0 |
| Fisheries | 22.0 | 14.7 | 10.2 | 8.2 |
| Mining | 28.0 | 13.4 | 8.2 | 5.2 |
| Manufactured products | 27.0 | 62.4 | 77.3 | 83.6 |
| (Light industry) | (89.3) | (86.4) | (88.9) | (84.4) |
| (Heavy-chemical ind.) | (10.7) | (13.6) | (11.1) | (15.6) |

Source: The Bank of Korea, *Economic Statistics Yearbook*, 1972.

and textiles.

It has undoubtedly been an important aspect of Korea's industrial success that it has concentrated on light consumer and other final products where the capital requirements were low relative to output, and that it was willing to rely to a large extent on imported equipment and intermediate goods rather than on higher cost domestic substitutes. These policies have surely helped the competitiveness of Korean export products, and in fact made it possible for the Korean economy to finish up FIS industrialization toward the end of 1960s and to pave the way for SIS. Simply speaking, the process of industrialization in the Korean economy was able to generate its own momentum through the building up of an export-oriented light consumer-goods sector which played the role of the heavy industries sector.

At least three other factors must be mentioned in Korea's case as responsible for the drastic expansion of exports and for a significant change in the composition of exports, in addition to the transformation of the domestic industrial structure that has moved along FIS—$E_2$ process. They are a comparative advantage in terms of unit labor cost and wage differentials, the favorable trends of the world demand pattern, and government's promotionary measures. The first one will be now considered, and the other two will be dealt with as our discussion proceeds.

Korea is well endowed with the human capabilities for achieving rapid

growth. It has an unusually well educated labor force which is vigorous and industrious, and also adaptable to exacting industrial discipline. These characteristics combined with such complementary factors as the normal operations of large-scale plants, the increase in tangible fixed assets per employee and the improvement of skill have been embodied in productivity improvement. Since its productivity increased faster than wages in 1962-70 (the former index with 1965 as 100 rose from 73.4 to 209.2 over the period, and the latter index increased from 107.1 to 149.4), it has promoted exports through reduction of wage costs in exported commodities.(6) How advantageous and competitive it has been in comparison with industrial nations is shown in Table 2 below, in which columns 5-7 are noteworthy for the trend of unit labor cost indexes.

**Table 2. International Comparison of Production, Labor Productivity, and Labor Cost in Manufacturing Industries**

| | Annual Increase Rate for 1961-69 | | | | Unit Labor Cost Indexes* with 1960 as 100 | | |
|---|---|---|---|---|---|---|---|
| | Production | Labor Productivity | Real Wage | Export Volume | 1962 | 1966 | 1969 |
| Korea | 18.0 | 12.8 | 5.2 | 38.2 | 90.0 | 62.8 | 53.3 |
| Japan | 13.4 | 10.4 | 4.7 | 15.9 | 93.9 | 77.4 | — |
| Israel | 12.2 | 5.6 | 3.9 | 24.7 | 98.9 | 98.8 | 86.4 |
| U.S.A. | 5.4 | 3.5 | 1.4 | 7.5 | 95.0 | 86.4 | 83.4 |

Source: The Bank of Korea, *Reorganization of the Korean Industrial Construction* (Seoul: Samsung Printing Company, Ltd., 1971), pp. 77.

Note: Unit labor cost index is derived by dividing wage index by productivity index.

Almost equally significant is the relative importance of the effect of inter-industrial wage differentials on trade composition. Although the importance

(6) Dr. Kanamori relates export volumes with wage costs in ten industrialized countries and shows a significantly high, negative correlation between the two, making a reservation that the rate of export expansion is affected not only by wage costs but by the volume of output as well. See H. Kanamori, "Economic Growth and the Balance of Payments," in *Postwar Economic Growth in Japan* ed. by R. Komiya (Berkeley: University of California Press, 1966), Ch. 4 (see esp. pp. 82-83); "Economic Growth and Exports," in *Economic Growth: The Japanese Experience since the Meiji Era* ed. by L. Klein and K. Ohkawa (Homewood, Illinois: Richard D. Irwin, Inc., 1968), Ch. 10 (see esp. pp. 309-310).

is minimized empirically[7] on the ground that the pattern of interindustrial differentials is similar from one nation to another, Korea's lower wages have been comparatively significant enough to bring about absolute cost advantages in manufacturing industries, as is shown in Table 3. While the hourly wage has rapidly increased by 19.5% in Japan and by 117.8% in West Germany over the period 1962-70, due to labor shortages, Korea saw an increase of 91.3% over the same period, and there was an increase of 65.2% from 1962 to 1969, during which period Taiwan experienced an increase of 75.0%. In the case of the U.S., the hourly wage already at a higher level has steadily increased by 44.8%. Hence, money wages in Korea were, as of 1970, about one-seventh that of West Germany, about one-fifth that of Japan, and only one fifteenth that of the U.S., and also were 10% lower than that of Taiwan in 1969.

**Table 3. International Comparison of Hourly Earnings in Manufacturing Industries**

(Unit: U.S. dollar)

| | 1962 | 1967 | 1969 | 1970 | Increase Rate (%) |
|---|---|---|---|---|---|
| Korea | 0.115 | 0.123 | 0.9 | 0.22 | 91.3 |
| Taiwan | 0.12 | 0.16 | 0.21 | — | 75.0 |
| Japan | 0.34 | 0.63 | 0.86 | 1.00 | 194.1 |
| W. Germany | 0.73 | 1.15 | 1.43 | 1.59 | 117.8 |
| U.S.A. | 2.32 | 2.83 | 3.19 | 3.36 | 44.8 |

Source: The Korea Development Bank, *Korean Industry*, Vol. III (1971), pp. 439.

This relatively low wage along with the increased labor productivity has resulted in lower prices, which in turn gave comparative advantage to the Korean light manufacturing industries in export expansion, thus offering a strong possibility of realizing a higher rate of growth to the Korean economy.[8] For this very reason it is suggested that Korea's labor force and other fast-growing economies deserve an appropriate adjective before its

(7) For instance, B. Balassa, "An Empirical Demonstration of the Classical Comparative Cost Theory," *Review of Economics and Statistics*, Vol. XLV, No. 3 (August, 1963), pp. 231-38.

(8) Professor Ranis has made a sharply analytical and detailed exposition with respect to Korea's "efficient" labor using innovations: "In cotton weaving, for example, one Korean girl mans 3 looms as contrasted with 4 in Japan; in spinning the contrast is between 600 and 900

word, for example, "abundant" labor force rather than "surplus, redundant or excess" labor force. The former is taken to mean that it has more than zero contribution and too much of it can never be too much in the sence that it is serviceable and will be soon absorbed completely. On the other hand, the latter implies zero or negative marginal productivity and condemned or static nature of nuance. An incorrect expression of the word leaves the impression that the supply function of labor can be treated as perfectly elastic in all developing countries. This may be true only up to the industrializing stage of economic develoment. But nowadays many developing countries have made considerable advance in its industrialization and, as is the case of Korea, are entering into a labor shortage situation.

As might be expected in the growth process of Korean exports, quite a substantial progress has been achieved in the diversification of its export commodities and trading foreign markets, to which we shall direct our dis-

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spindles. Moreover, Korean machinery is run for 3 eight-hour shifts daily as contrasted with only 2 such shifts in Japan. In the production of plywood what at first appear as production processes very similar to those carried on in the U.S., in fact, turn out to be quite flexible —interestingly enough mainly because of the greater machine speed combined with much more labor-intensive repair methods used. In the United States, defective pieces of lumber are cut out automatically by machine and discarded. In Japan, defective pieces of lumber are cut out by hand and the section is discarded. In Korea, defective sections are cut out by hand, the scraps saved, and the defect plugged manually. In this fashion lower quality raw material can be upgraded to an equivalent quality output through the application of cheap labor. Overall we found twice as many workers per unit of capital equipment in Korea, i.e. 123 workers are engaged per equivalent capital production line as contrasted with 72 in Japan; moreover, a Korean line is worked a 22-hour day as compared to 20 in Japan. At the same time between 10 and 15 percent more workers are engaged in inspection, repair and maintenance of both materials in process and the machinery in place. Finally, in electronic's machine-related labor-using innovations and adaptations are again prominent. In transistor assembly operations, for instance, given wage rates 10 times lower than equivalent operators get in the U.S.(for the same firm), the machinery is run at physical full capacity, i.e. six days, three shifts a day which is 20 percent above the U.S. equivalent. The difference in speed of assembly on identical equipment can yield a 30 percent differential in output(from 68 units per machine hour to 85) and in a die mounting process it rises to more than 100 percent(from 113 units per hour to 240). Greater speeds of operation, either due to faster machine or operator pacing, are here once again accompanied by putting additional girls into more intensive testing, inspection, maintenance and repair efforts than is encountered in Japan or the U.S."(G. Ranis, *op. cit.*, pp. 15-16).

cussion. According to the recent data,[9] Korea exported about 100 different commodities in 1961, but in 1971, the types of items exported reached 983. The greater diversity of export items implies in development terms that the relative stagnation of world demand for some exports can be balanced, or outweighted, by the more dynamic demand for others. In other words, the wider the range of commodities in the export basket, the better the prospect of expanding export earnings, even in the face of unfavorable market conditions. Thus, Korea's export earnings have been rapidly increased as its export commodity concentration was reduced annually. At the same time, the number of countries trading with Korea rose from 25 countries in 1961 to 108 in 1971. It is to be noted here that although the trading countries increased in terms of numbers, Korea's geographically lop-side trade was there: throughout the 1960s the U.S. and Japan took a lion share of Korean exports, ranging from approximately 60% to 75%, The high degree of concentration is largely ascribed to Korea's political and economic ties with these countries and its right kind of export commodities, namely, traditional products such as sea products and minerals plus textiles and clothing for Japan, and mostly labor-intensive light manufactures such as textiles and garments, wigs, plywood and shoes for the U.S.

Table 4 shows the relative importance of the trading customers. In 1963, Japan and the U.S. accounted for 56.6% of total exports, then in 1967 for 69.4%, and in 1970 for 73.6%. This is translated into a more meaningful illustration by the export estrangement coefficient(see columns 3, 6 and 9 of the Table). The idea is to measure Korea's export dependence on a trading country, and it is derived from a comparison between how much a particular

(9)

| | 1961 | 1966 | 1969 | 1971 |
|---|---|---|---|---|
| No. of Export Commodities | 100 | 445 | 882 | 983 |
| No. of Countries | 25 | 70 | 98 | 108 |

Source: W.S. Tae, Minister of Economic Planning Board, *Development of Korean Economy*(Seoul: Samhwa Publishing Company, 1972), pp. 105.

**Table 4. The Export Estrangement Coefficient of Korea by Geographical Areas**

| | 1963 | | | 1967 | | | 1970 | | |
|---|---|---|---|---|---|---|---|---|---|
| | $E_{xk}$[(a)] | $I_{mw}$[(b)] | $E_sC_o$[(c)] | $E_{xk}$ | $I_{mw}$ | $E_sC_o$ | $E_{xk}$ | $I_{mw}$ | $E_sC_o$ |
| Japan | 28.6 | 4.4 | 6.50 | 26.5 | 5.4 | 4.91 | 23.4 | 5.9 | 3.91 |
| U.S.A.* | (28.0) | (13.0) | (2.15) | (42.9) | (14.3) | (3.00) | (50.2) | (14.8) | (3.39) |
| N. America | 28.3 | 15.1 | 1.87 | 45.6 | 17.3 | 2.64 | 53.1 | 18.1 | 2.93 |
| E.E.C. | 6.4 | 26.3 | 0.24 | 4.9 | 25.6 | 0.19 | 5.1 | 27.7 | 0.19 |
| E.F.T.A. | 2.6 | 18.2 | 0.14 | 5.2 | 17.5 | 0.30 | 3.3 | 16.2 | 0.10 |
| SE Asia & others | 34.1 | 36.0 | 0.95 | 17.8 | 34.2 | 0.52 | 16.1 | 32.2 | 0.52 |
| World | 100.0 | 100.0 | 1.00 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 1.00 |

Source: General Agreement on Tariffs and Trade(GATT), *International Trade* 1970(Appendix) and The Bank of Korea, *Economic Statistics Yearbook*, 1966 and 1970-71(Foreign Trade and Foreign Aid)

Notes: (a) $E_{xk}$ stands for the geographical distribution of Korean exports(%); (b) $I_{mw}$ represents trading area's relative share of world imports(%); (c) $E_sC_o$ denotes the export estrangement coefficient of Korea($E_{xk}/I_{mw}$).

* The United States is included in North America along with Canada. EEC and EFTA stand for European Economic Community and European Free Trade Association respectively, and SE Asia and others comprise South and East Asia, Middle East, Latin America, Africa and other developing areas of the world(see GATT, *Ibid.*, pp. 211-212).

trading customer ranks in Korea's exports and its proportion of world imports(if the trading country took five per cent of Korea's exports and this figure were divided by, say, the ten per cent which represents its proportion in the total world imports, then the estrangement coefficient would be 0.5; the coefficient of more than 1 would mean a high degree of Korea's export dependence on the trading country). As is calculated in the Table, Japan and the U.S. represented the coefficients of 6.50 and 2.15 respectively in 1963, and 3.91 and 3.39 respectively in 1970. The rest of the world is classified into areas following the data shown in International Trade 1970 by General Agreement on Tariffs and Trade. No area, in fact, no country showed the coefficient of more than unity. As far as non-industrial areas comprising South-East Asia, Middle East, Africa, Latin America and other underdeveloped parts of the world are concerned, their share in Korean exports was 34.1% in 1963 and declined to 16.1% in 1970, due to the change in their import pattern toward heavy-chemical products, especially, engineering products. In this connection, brief mention must be made of the fortuitous factor

associated with the Vietnam conflict. Although it has been an insignificant element(about 1—3% of total) in the expansion of Korean exports in the usual sense of the term, total receipts from exports of goods and services plus private transfers in the form of remittance from the military personnel fighting there and from the civilian wage earners became significant figure since 1966, when a large Korean military force went to Vietnam as did numerous civilian workers, ranging from about 11% to over 17% of total foreign exchange earnings.

As for European countries, it is seen in the Table that they represented 9% of total exports in 1963, 10.1% in 1967 and 8.4% in 1970, while the export estrangement coefficient reflects a low degree of Korea's export dependence on them. The reasons can be found in their bloc economic units(EEC and EFTA) that render discriminative tariff measures in their tendency to turn to former colonies for raw materials and light manufactures, and in more transportation cost and difficulty in delivery as scheduled because of long distance.

Our discussion regarding Korea's commodity and geographical diversifications conforms to empirical findings(10) that a negative relation exists between the degree of commodity concentration and the relative gain or loss in market shares and that a high degree of market concentration, though it may involve certain rigidities which may make adaptation to changing market conditions difficult, tends to reflect special institutional and cultural as well as trade ties with particular major importers and this results in a favored position in these markets for such exporters.

In view of the buoyance that characterized over-all world trade and espe-

(10) See United Nations Conference on Trade and Development, *The Measurement of Development Effort*(Geneva, 1970), pp. 43-44. In this study, for 26 developing countries, an equation was fitted using four variables to explain the relative competitiveness of individual countries as regards their exports of major commodities ($S_k$). The results are shown here:

$S_k=7.5-0.12T_p(3.4)-0.11C_k(3.1)+0.06M_k(2.1)-0.06F(1.5)$ $R^{-2}=0.57$

where $T_p$ denotes trade position indices, $C_k$=an index of commodity concentration, $M_k$=an index of market concentration, and $F$=the internal rate of inflation.

cially the export of manufactured goods in the 1960s,[11] Korea in which export development has been particularly strong might have been influenced by the strong demand conditions and also by the bias of the import demand in favor of manufactures. In seeking to evaluate Korea's export performance, we shall use a measure of "competitiveness" or "effort," namely, the specialization index[12] of export commodities. This device can relate the favorable trend of the world demand pattern to the export effort of Korea. It is derived from a comparison between how much proportion a particular commodity commands in world exports and its proportion of Korea's total exports. According as the index indicates below or above unity, the relative competitiveness of the commodity is determined, thus revealing a degree of effort intensity on the part of Korean exports. That is, when world demand for the commodity is rising and Korea's share is rising faster than that, the index would be above unity and Korea's effort has been more enhanced relative to the favorable world demand. Table 5 is prepared on the basis of this principle.

As might be expected, the specialization index of the Korean primary products has decreased from 1.29 in 1963 to 0.68 in 1970 as a result of the more rapidly decreasing rate than that of world trade in those products, and the index of manufactures increased from 0.81 in 1963 to 1.20 in 1970, reflecting Korea's average increase rate of these commodities at a faster pace than that of world trade in them, of which light manufactures obviously

(11) Development of World Exports

Volume(1960=100)

| | 1960 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 |
|---|---|---|---|---|---|---|---|---|---|
| Agricultural products | 100 | 111 | 119 | 123 | 130 | 130 | 136 | 141 | 152 |
| Minerals | 100 | 120 | 129 | 133 | 140 | 153 | 172 | 181 | 198 |
| Manufactures | 100 | 126 | 143 | 155 | 171 | 181 | 208 | 238 | 255 |
| Total | 100 | 120 | 132 | 141 | 151 | 159 | 180 | 197 | 214 |

Source: GATT, *op. cit.*, Table(rows 9-12).

(12) This index was a part of the Japanese planner's stock in trade whereas in Britain such statistics were a novelty even in 1965 when an industrialists' league table based on the same principle caused heated discussion at the annual conference of the British Association. See P.B. Stone, *Japan Surges Ahead*(New York: Grederick A. Praeger Publishers, 1969), pp. 151.

**Table 5. The Specialization Index of Export Commodities**

| | Commodity Composition Ratio of World Exports | | | Commodity Composition Ratio of Korean Exports | | | The Specialization Index | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1963 | 1967 | 1970 | 1963 | 1967 | 1970 | 1963 | 1967 | 1970 |
| Food | 19.5 | 17.3 | 14.9 | 21.0 | 14.1 | 10.5 | 1.08 | 0.82 | 0.70 |
| Raw materials | 9.3 | 7.0 | 6.6 | 14.8 | 9.6 | 6.3 | 1.59 | 1.37 | 0.95 |
| Ores & minerals | 3.2 | 3.3 | 3.1 | 15.6 | 8.5 | 5.4 | 4.88 | 2.58 | 1.74 |
| Fuels | 10.2 | 9.7 | 9.1 | 3.0 | 0.6 | 0.8 | 0.29 | 0.06 | 0.09 |
| Total primary products | 42.2 | 37.2 | 33.7 | 54.3 | 32.7 | 23.0 | 1.29 | 0.88 | 0.68 |
| Non-ferrous metals | 3.1 | 3.8 | 4.0 | 0.3 | 0.6 | 0.8 | 0.10 | 0.16 | 0.20 |
| Iron & steel | 4.8 | 4.8 | 5.0 | 13.5 | 0.6 | 0.8 | 2.81 | 0.13 | 0.16 |
| Chemicals | 6.1 | 6.9 | 7.1 | 1.0 | 0.7 | 1.6 | 0.16 | 0.10 | 0.23 |
| Engineering products | 20.4 | 22.2 | 22.9 | 5.3 | 6.6 | 10.1 | 0.26 | 0.30 | 0.44 |
| Road motor vehicles | 4.7 | 5.9 | 7.1 | — | — | — | — | — | — |
| Textiles & clothing | 5.9 | 5.7 | 6.0 | 14.3 | 34.1 | 36.8 | 2.42 | 5.93 | 6.07 |
| Other manufactures | 10.9 | 11.7 | 12.3 | 11.0 | 24.9 | 27.3 | 1.01 | 2.13 | 2.22 |
| (Light manufactures) | 16.8 | 17.4 | 18.3 | 25.3 | 59.0 | 64.1 | 1.51 | 3.37 | 3.48 |
| Total manufactures | 55.9 | 61.1 | 64.4 | 45.5 | 67.2 | 77.0 | 0.81 | 1.10 | 1.20 |
| Residue | 1.9 | 1.7 | 1.9 | 0.2 | 0.1 | — | 0.11 | 0.06 | — |
| Total exports | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: GATT, *op. cit.*(Trade in Commodities) and the Bank of Korea, *op. cit.* (Exports by Commodity Group).

Note: For the explanation of the commodity breakdown of exports, see GATT's pp. 213-214.

attract our attention. Light manufactured goods as a whole have made great strides in enhancing competitiveness; their index went up from 1.51 in 1963 to 3.48 in 1970. This means that Korea's efforts in this direction outstripped overseas demand effect by great margins as is revealed in the comparison between columns 1-3 and 4-6 in the fourth last row. Naturally we would like to know what commodities gave rise to the marked expansion of light manufactures in the Korean export structure. Most of all, we can put our fingers on textiles and clothing which alone constituted 56.5% of total light manufactures in 1963, 57.8% in 1967 and 57.4% in 1970 and whose specialization index has rapidly increased from 2.42 in 1963 to 5.93 in 1967 and 6.07 in 1970. It is to be noted here that these commodities comprise so diversified products. Let me bring up as an example major textiles products: sweaters, clothing, shibori, cotton fabrics, warp-knitted fabrics, wollen fabrics and wool manufactures, synthetic fibre fabrics, rayon fabrics, sewing goods,

silk fabrics: textile yarn, etc.. It is also to be mentioned in the context that if the role of Korea's exports could be considered as an engine of growth, the role of textiles and clothing would be paralleled to an "accelerator" of growth.

On the other hand, Korea's heavy and chemical industries saw themselves far from pulling their weight in the world competition. But, by and large, its export performance in the 1960s has been successful and demonstrated the competitive degree of about 87-90%, while depending on the overseas demand effect for the remainder. Finally, we shall make brief mention of the Korean government's promotionary measures[13] in order to complete the account of the factors responsible for the drastic expansion of exports.

The development of exports was associated to a considerable extent with the reform of exchange policies. Prior to 1964 the exchange rate was periodically adjusted to rising domestic prices, but the time lag between the adjustment and price movement tended to keep the exchange rate overvalued. Given this situation, domestic producers did not have adequate incentive to produce for export, while the growing demand for imports had to be restrained by tight import restrictions, the condition of which often caused another difficulty of underutilization of existing capacity. In May, 1964, as part of the government's overall financial stabilization program, the fixed rate of 130 won to $1 was replaced by a floating rate with a lower limit of 255 won. At the same time, all existing multiple exchange rate devices were abolished, and quantitative import restrictions were relaxed, particularly for industrial raw materials.

The unitary floating rate system was to take the form of an exchange certificate market. A recipient of foreign exchange could obtain certificates from an authorized bank or sell the foreign exchange directly to the bank for local currency at the daily rate posted by the Bank of Korea. The market

(13) S.H. Kim, *Foreign Capital for Economic Development: A Korean Case Study*(New York: Praeger Publishers, 1970), Ch. 3(esp. pp. 115-125); W.S. Tae, *op, cit.*(esp. pp. 62, 89-90 and 106-107); I.S. Song, "A case Study in Export Promotion: Korea," *Korea Observer*, Vol. II, No. 2-3(April, 1970), pp. 78-92. The description of the government's measures is heavily dependent upon these references.

price of exchange certificates was to be determined freely and was to serve as a guide for the eventual establishment of some sort of "equilibrium" rate.

As far as direct export incentives are concerned, there are export-import link system, export trade credit system, direct subsidy system, internal tax exemption, tariff reduction, wastage allowance, low interest loans for export production, etc.

If we examine the loan system to support exports, unlimited amounts of loans are provided for 90 to 135 days to finance imports or domestic production of raw materials. These loan funds are supplied with the rediscount of the central bank, and exporters who already have production facilities can get low-interest loans during the necessary period for domestic production, once they receive an L/C or make export contracts. Low interest rate loans can be given for import of raw materials and domestic supply related to such export activities, and payments are guaranteed for import of raw materials beginning from the opening of L/C till the arrival of B/L. Therefore, we may say that the entire operating funds in exports and processing were financed with low interest loans. The expansion of production capacity for exports also received more preferential treatment than ordinary loans through foreign exchange loans.

If we examine the tax system to support exports, exporters are exempt from tariffs and commodity taxes when they import raw materials required for export activities. They are also exempt from business activity tax and any kind of consumption tax such as commodity tax, and half of their income from foreign exchange earnings is exempt from income tax and corporation tax. Even when a raw material was originally imported for domestic sale, if it is used for processing of export goods, the import tariff is reimbursed or the same amount of raw material can be imported without tariff. Electricity and railroad transportation are also provided at discounted rates for such export items as cement, and there are partial import right based on export-link system, allowance of L/C import right, and technical earnings due

to wastage allowance on imported raw materials.

And since the export subsidy system excessively emphasized support to export through raw material imports, the government has expanded the domestic L/C system, in order to raise the domestic value-added content, which provides equal preferential treatment to domestic suppliers of raw material.

However, we have to say that economic system is not so simple as to let "good but biased things" for exporters be taken too far. It is to be noted that the cost of these concessions for the export sector(as well as for producers of import substitutes) must have been borne somewhere in the economy. Partly, the costs were passed along in the form of higher prices for the goods produced. Hence, they fell on the domestic consumers of the goods. Partly, they fell on public resources in the form of revenues foregone from imports and of subsidized credits from the banking system. Consequently, these costs constituted an element in Korea's monetary imbalance and in the problem of inflation, both from the cost-push side through relatively high imports content of exports and from the demand side through their contribution to credit expansion by the banking system.(14)

Under this adverse circumstance, the unitary floating rate system as mentioned before could not be as effective as it was originally supposed to. Since the supply of exchange has been strongly supported by the influx of short-term and long-term foreign capital independent of exchange rates, the rate failed to reflect automatically the fundamental disequilibrium in the balance of payments. In fact, while the adversary inflation brought an increase of more than 8 per cent a year in the domestic wholesale price, the exchange rate has depreciated only by less than 2 per cent a year. This implies that the cost-price structure changed against the export producers, and the over-valued exchange rate has once again become a grave problem. Consequently, in March, 1972, the government devalued the exchange rate to 350 won per

(14) World Bank, *The Economic Situation and Prospects of the Republic of Korea*(September, 1971), pp. 7.

export dollar.

Noteworthy in the context of the Korean government's export promotion measures is the critical remark that Professor Kuznets has made with a self-addressed question, "Are resource costs per dollar of net foreign-exchange earnings minimized?" in the following way: "The performance may well be suboptimal. When the opportunity costs—represented by cheap credit, favored access to imported materials, tax preference, and the other subsidies given exporters—are added to conventional costs, total resource costs per unit value of exports may be quite high. If resource costs can be decreased and net foreign-exchange earnings per unit value of exports increased, resources have been wasted in export promotion. I suspect that this has occurred—that it has occurred because little attention has been paid to the economic values associated with exports and because little is known of the actual cost of export subsidies or the opportunity costs associated with the current policies. The drive for 'export first' has obscured the purpose and the costs of exports. Perhaps when the novelty of the export push wears off, there may be an opportunity to apply the traditional economic calculus."(15)

Evidently, the overly protective support of the government would be self-defeating if continued indefinitely, but it might be somewhat justified in the industrializing process of structural change in which the high cost of learning-by-doing is practically unavoidable for opening up new markets, reorienting the industrial structure toward exports, and inducing private business to shoulder the risks attached to the international trade. Apart from the resource and price problems, Korea's export promotion has confronted with structural and development problems, which will be discussed subsequently.

We have so far discussed a significant contribution made by the exports toward Korea's modern economic growth. Putting it concisely, the export

(15) P.W. Kuznets, "Korea's Five-Year Plans," in *Practical Approaches to Development Planning: Korea's Second Five-Year Plan* ed. by I. Adelman(Baltimore: The Johns Hopkins Press, 1969), Ch. 3(see pp. 64).

expansion has, on the strength of its compositional transformation and increased competitiveness, induced industrialization to take root in the Korean economy. This means a simultaneous increase in Korea's economic growth because exports are a strategic component of GNP. Then, what interests us at this point is how the income-creation effect of the export expansion has worked on Korea's foreign trade sector as a whole.

A glance at an open-economy's accounting identity for GNP from the functional standpoint indicates that when the economy's exports increase, the income multiplier will always bring about a change in imports by an amount which depends on the relative strength of the marginal propensity to save and the marginal propensity to import. Loosely speaking, as the level of income rises we expect an induced rise in consumption expenditures and also in investment expenditures. With a rise in expenditures we also expect that some portion of these expenditures will be for imported goods and services. In this way imports are related to GNP. This is true for any open economy, developed or developing (See any open economic model and imports are treated as an endogenous variable such that they are a function of GNP).

In the case of developing countries, however, more imports are required for growth, in addition to the limited imports that are made possible on the orthodoxical comparative advantage theory primarily concerned with the optimum allocation of resources in a static sense. By more imports, I mean the kind of imports that will put unutilized and underutilized resources into total potential output, to be specific, such imports as capital goods, raw materials and new inventive technology required for investments in social overhead capital and directly productive activities. Hence it is not too much off the point to say that imports demanded in developing countries are usually larger than potential exports, thus the countries being characterized as import-surplus economies, whereas income changes in advanced countries tend to stabilize at an equilibrium level, thus the countries being characterized as balancing economies.

The adjustment to an "equilibrium" import-GNP ratio would be a long process and long-term task ahead of developing countries. As import substitutes increase and dynamic technological innovations associated with an export expansion through price reduction develop further, the external equilibrium is getting to be achieved. In other words, developing economies will be in a position to achieve a favorable balance of payments only when the extent of substitution and positive price effects is powerful enough to offset a negative effect through a rise in domestic income that raises the level of import demand.

Until adjustment to the equilibrium situation in terms of both the current transactions balance and the trade balance is made, developing countries will have experienced the excess of imports over exports. The necessity of import surplus in the early stages of industrial development has been so much stressed in recent years as to be given a terminology by the name of the "foreign exchange gap."(16) There is no doubt that external resources help to accelerate development of developing economies. This has been succinctly explained as follows: "Developing countries with significant capital imports during a prolonged period develop a structural dependence on capital imports. In consequence of the low equilibrium exchange rate for foreign currency, the share of non-tradable goods and services is relatively large, i.e. only tradable goods with relatively high comparative advantage are produced. This leads to a relatively small capital-product ratio with a consequently higher per capita income than in economies with the same volume of capital and natural resources per head at the same technological level, but without an import surplus."(17)

(16) Professor Findlay has clarified the controversial foreign exchange constraint doctrine from the standpoint of the pure theory of international trade, while retaining the main point of the argument that limited trading opportunities restrict the growth which less developed countries can attain through their efforts alone. See R.E. Findlay, "The 'Foreign Exchange Gap' and Growth in Developing Economies," in *Trade, Balance of Payments, and Growth* (Amsterdam: North-Holland Publishing Company, 1972), Ch. 8, pp. 168-182.

(17) F. Ginor, "The Impact of Capital Imports on the Structure of Developing Countries," *Kyklos* 22, facs. 1, 1969, pp. 119-120.

This explanation fits very well to the Korean experience in achieving rapid growth in the 1960s. Social overhead capital and other services as an non-tradable sector occupied an average annual share of 44% in GNP over the period with their contribution ratio to the GNP of 54%, and were shown in the highest proportion of more than 60% in terms of fixed investment by industrial use, and also almost half of the foreign investment resources has been allocated to them. And as mentioned earlier, Korea, by limiting the production of tradables to labor-intensive light manufactures with a high comparative advantage, has seen the average capital-product ratio tending to be smaller and average product per employed person larger. Thus, export expansion, together with the large investment in social overhead capital and other services made possible by capital imports has increased the growth rate.

Now we shall examine the extent to which Korea has been an import-surplus economy by comparing its exports with imports. Table 6 shows that in the international finance, Korea's average annual exports were $324.4 million in 1962-70 and its imports were $981.4 million over the same period, thus its trade deficit being $657.0 million. A close look at it indicates that Korea's trade deficit in absolute terms was expanding faster than the exports —from $367.0 million in 1962 to $1,148.8 million in 1970, and that Korea has imported almost three dollars worth of foreign goods for every dollar of

**Table 6. Korea's Exports and Imports**

(million dollars)

| | 1962 | 1966 | 1970 | Averages (1962-1970) |
|---|---|---|---|---|
| Exports(goods) | 54.8 | 250.3 | 835.2 | 324.4 |
| Imports(goods) | 421.8 | 716.4 | 1,984.0 | 981.4 |
| Trade Balance | −367.0 | −466.1 | −1,148.8 | −657.0 |
| Ratio of E* & I* to GNP | 23.0 | 32.4 | 43.4 | 32.3 |
| E*(goods & services) | 6.1 | 12.0 | 16.8 | 11.4 |
| E (goods) | 2.2 | 6.8 | 10.8 | 6.4 |
| I*(goods & services) | 16.9 | 20.4 | 26.6 | 20.9 |
| I (goods) | 15.9 | 19.1 | 23.7 | 19.2 |
| Increasing Rate of E* | 34.1 | 43.0 | 34.2 | 40.1 |
| Increasing Rate of I* | 33.4 | 54.6 | 8.8 | 25.2 |

Source: The Bank of Korea, *op. cit.*

its goods sold. As might be expected, Korea's dependence on trade is high; the ratio of exports plus imports of goods and services to GNP has increased from 23.0% in 1962 to 32.4% in 1966 and 43.4% in 1970. Its dependence on export is comparable to Chenery's findings[18] on normal variations in foreign trade with level of development, since Korea with per capita income of $200 around 1970 had exports of 16.8% relative to his 16.3% at the level of $200. But its dependence on imports was substantially in excess of his computed variation; 26.6% in 1970 versus 20.6% at $200 level. The encouraging aspect of Korea's trade performance is that the rate of increase of exports(40.1%) far exceeded that of imports(25.2%) on the annual average basis during the period 1962-70, although the former has trailed the

**Table 7. Index Numbers of Foreign Trade and Terms of Trade**

(1965=100)

| | Quantum index | | Unit value index | | Net barter terms of trade | Income terms of trade |
|---|---|---|---|---|---|---|
| | Exports | Imports | Export | Imports | | |
| 1963 | 52.6 | 124.5 | 94.2 | 97.1 | 97.1 | 51.1 |
| 1964 | 70.6 | 88.8 | 96.3 | 98.3 | 98.2 | 69.3 |
| 1965 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1966 | 131.0 | 158.1 | 109.1 | 97.8 | 111.6 | 146.3 |
| 1967 | 160.2 | 217.7 | 114.1 | 98.7 | 115.6 | 185.3 |
| 1968 | 221.2 | 323.9 | 117.6 | 97.8 | 120.2 | 265.9 |
| 1967 | 318.0 | 408.5 | 111.8 | 96.3 | 116.1 | 369.1 |
| 1970 | 408.2 | 427.3 | 116.7 | 99.9 | 116.8 | 478.5 |

Source: The Bank of Korea, *op. cit.*(Foreign Trade and Foreign Aid)

Notes: Quantum indexes are computed through the Laspeyres formula with 1965 as 100, and unit value(price) indexes are derived by dividing value indexes as determined by volume and prices by quantum indexes.

$$\text{Net barter terms of trade} = \frac{\text{Export unit value index}}{\text{Import unit value index}}$$

Income terms of trade = Export quantum index × Net barter terms of trade

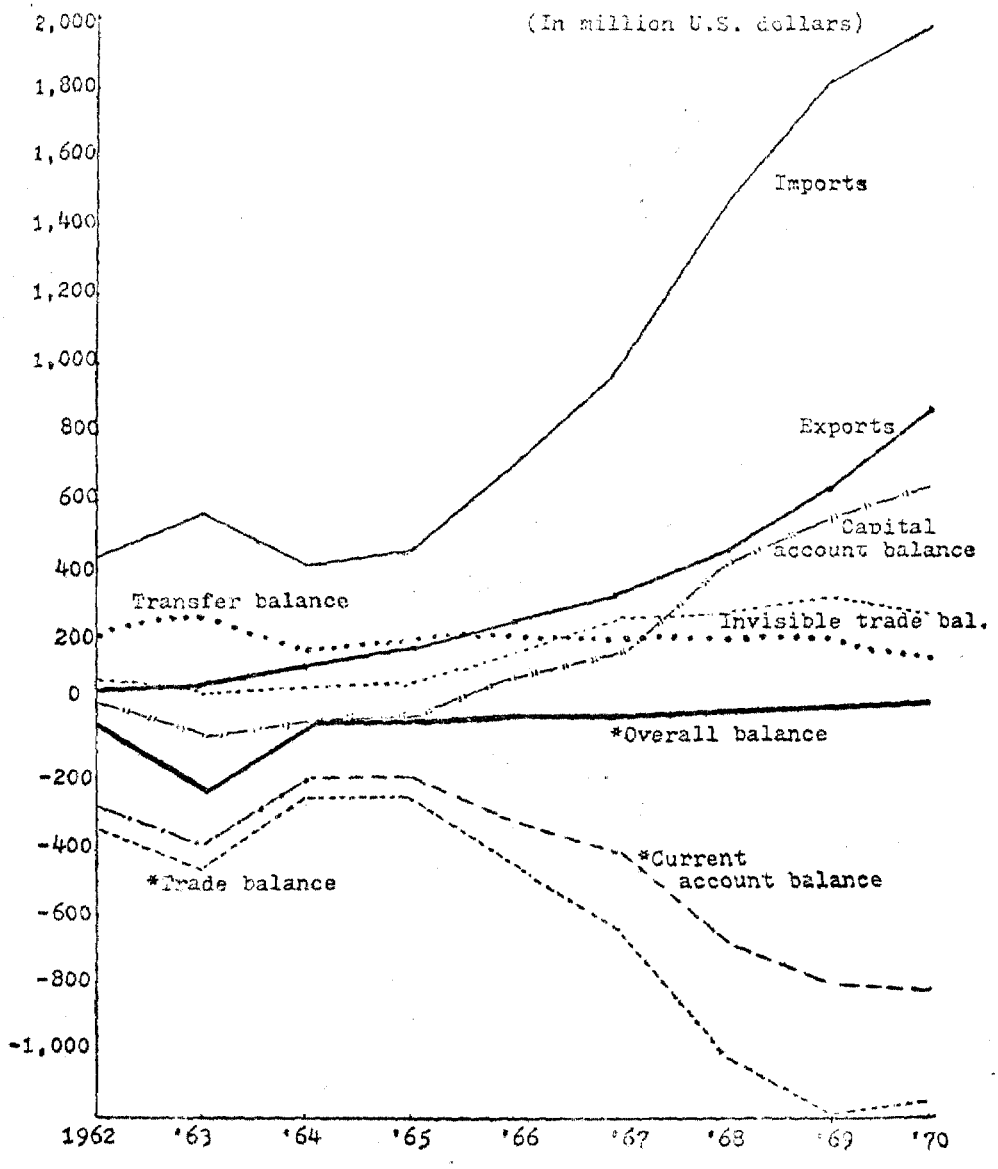
(18)

| | Level of GNP per capita ($1964) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 50 | 100 | 200 | 300 | 400 | 600 | 800 | 1000 | 2000 |
| E* as % GDP | 9.9 | 13.2 | 16.3 | 18.0 | 19.1 | 20.7 | 21.8 | 22.5 | 24.8 |
| I* as % GDP | 16.6 | 18.7 | 20.6 | 21.6 | 22.3 | 23.2 | 23.8 | 24.3 | 25.5 |

Source: H.B. Chenery, "Targets for Devleopment," *op. cit.*, Table 1, rows 14-15.

Notes: Asterisk is taken to mean exports and imports of goods and services. The data covers about 100 countries over the period 1950-65.

latter up to 1969. Furthermore, despite the export expansion, Korea's terms of trade and hence the real purchasing power of export earnings have been, on balance, advantageous(See Table 7). On the other hand, since this has been translated fully into its balance of payments, the widening deficits can be interpreted as a real, not nominal, balance.



We have just seen that expenditures on imports outstripped export receipts by large margins. Obviously, this points to the fact that the deficits have been counterbalanced by large capital inflows into expanding Korean investments, from both public and private sources abroad. More obviously, the large balance of payments deficits are a critical and painful part of Korea's development problem in the light of its ever increasing external financing requirements as well as of its growing debt-service burden in the future. But I suspect that the huge import surplus characteristic of the Korean economy is a "reasonable," if not "optimum," price for the rapid economic growth; reasonable in view of Korea's development realities, and not optimum in the ideal perspective of structural change.

As for realities of Korea's dependence on large foreign capital, at least three causes must be mentioned. First, the domestic savings rate lagged far behind the high increase rate of investment to sustain the trend of economic growth rate getting higher. In fact, a half of the investment requirements was financed by foreign savings in 1962-70, although domestic savings took an increasing part in it over the period. Secondly, foreign capital investment has made great contribution to Korea's external economy where capital-output ratio is high. The social overhead capital and other services sector were adversely affected by North-South partition and the Korean war, and had not been built up to a satisfactory level. Thirdly, with the accelerated export expansion, import requirements have been high. The rapid increase in export of manufactured goods has induced imports of raw materials and capital goods which could not be dependent on the domestic supply due to underdevelopment of the heavy-chemical industries as well as of the agricultural sector, and to some extent, shortages of endowed resources (see Tables 8 and 9). Clearly, Korea's unusual export achievements have not meant an easing of balance of payments difficulties.

As for the ideal perspective of structural change, I have in mind the continuous and efficient moving-up process of industrialization which was

**Table 8. Agriculture-related Imports**

(million dollars)

| | 1962 | 1966 | 1970 |
|---|---|---|---|
| Grains | 40.1 | 61.3 | 244.8 |
| Raw cotton other than linters | 34.2 | 42.8 | 62.7 |
| Molasses | 0.6 | 0.7 | 4.8 |
| Feeds | 0.1 | 0.6 | 23.2 |
| Wood & lumber, pulp & tissue paper | 18.4 | 43.1 | 125.4 |
| Wool & animal hair, other textile fibres not manufactured into yarn, thread or fabrics | 16.1 | 23.8 | 57.2 |
| Raw sugar | 3.8 | 5.4 | 23.5 |
| Crude rubber including synthetic & reclaimed | 6.9 | 9.4 | 17.6 |
| Others* | 10.6 | 13.6 | 54.1 |
| Total | 130.8 | 200.7 | 613.3 |

Source: The Bank of Korea, *op. cit.*("Imports by Commodity Group and Commodity")

Note: Others* comprise the commodities of Code numbers 02, 05, 09, 21, 22, 29, 4, 00, 01, 07, and 1 as is classified by the U.N. Standard International Trade Classification Code.

**Table 9. Imports by Use of Commodity**

| (A) Amount( $ million) | 1962 | | 1966 | | 1970 | |
|---|---|---|---|---|---|---|
| (B) Composition (%) | (A) | (B) | (A) | (B) | (A) | (B) |
| Capital goods | 94.7 | 22.5 | 218.3 | 30.5 | 821.9 | 42.4 |
| Raw materials | 265.0 | 62.8 | 391.4 | 54.6 | 688.7 | 34.7 |
| Consumption goods | 62.1 | 14.7 | 106.7 | 14.9 | 473.4 | 23.9 |
| Total | 421.8 | 100.0 | 716.4 | 100.0 | 1,984.0 | 100.0 |

Source: Korea, Economic Planning Board, *Economic Survey*("External Transactions"), 1965, 1969, 1971.

discussed at the earlier part of this section: Greater productivity in agriculture($I^a$)→Primary exports($E_1$)→First-order import substitution(FIS)→Industrializating exports($E_2$)→Second-order import substitution(SIS)→Industriailzed export($E_3$). Korea has been undertaking $E_2$ process in the 1960s, while working on the final elimination of most finished consumer goods imports through FIS. Hence it might be easily taken for granted that Korea has got through the preceding processes, $I^a$ and $E_1$. This is the very pitfall that we must be alert to in analyzing the Korean development performance.

Let us draw our attention to the harmful impact of foreign aid of 1950s on the agricultural production and the Korean government's misconceived development stategy which had prematurely placed a high premium on rapid

industrialization in the 1950s. And also let us recall ourselves to the economic conditions "conductive" to Korea's pursuit of export-oriented industrialization in the early 1960s. It might be said in a word that a large portion of foreign aid including imports of surplus agricultural commodities under U.S. PL480 has substituted for Korea's agricultural production to a great extent. Consequently, no solid and expanding agricultural base has been laid in the Korean economy, not to mention no contribution of agricultural exports. Needless to say foreign aid is helpful, but just transient thing, and in fact it has been phased out in Korea. As is seen in Table 8, agriculture-related raw materials imports as well as food imports have grown tremendously in the late 1960s. To be a bit more specific, we relate these imports to the trade balance; it turns out to be 35.6% in 1962, 43.1% in 1966 and 53.4% in 1970.

Let me state what I always believe: "It is only when each sectoral unit in an economy functions its 'assigned' development role as desirably as possible that there can be an efficient growth pattern to follow, because, for example, the agricultural sector's failure to play out its role will in turn surely affect the developmental role of industry as many individual cases of nations have shown, thereby making very unfavorable effects upon the progressive moving up of an economy toward a more developed economic stage." Since the Korean economy has neglected the importance of the agricultural sector at the earlier stages of economic development, the industrial sector became to be burdened with the unnecessary role of pulling a dragging agricultural sector, which implies more import surplus than a necessary or reasonable one for the Korean economy. In this very sense, I was saying that the large import surplus characteristics of the economy is not a optimum price for the rapid economic growth.

Other problems and prospect in relation to the improvements of balance of payments will be discussed in the subsequent section.

## III. A Simple Trade Gap Projection to 1980

The immediate preceding sections have shown by and large that industrialization as a prime mover in the process of economic growth, exports as an "engine" of growth, the role of light manufactured (especially, textiles and clothing) paralleled to an "accelerator" of growth, and the contribution of larger capital inflows(imports) comparable to "fuel" of growth have surely heralded modernization to Korea in the 1960s. Simply putting it, we might say that the sixties' performance of the Korean economy has reflected economic development led by industrialization, and industrialization induced by exports, with the resultant huge increase in imports. All in all, it is almost impossible to consider the Korean economy in the 1960s without full recognition of the strategic importance of its foreign trade sector, and furthermore a bright prospect of Korea's economic development in the 1970s depends crucially upon a favorable interrelationship between its exports and imports.

We have discussed that the large balance of payments deficits are a critical and painful part of Korea's development problem in the light of its ever increasing external financing requirements as well as of its growing debt-service burden in the future, and also we have implicitly pointed out that the important thing would not be just to drive up exports, but to balance imports against them for an endurable and integrated economic system of Korea in structural development perspective.

The object of this section is to look forward and catch a glimpse of the interrelationships between Korea's exports and imports by projecting the trade gap to 1980, and to map out the required development strategy for this decade. The methods of the trade gap projections are, first, a simple aggregative model with Harrod-Domar production function, consumption function, imports function, and exogenously determined exports, and, secondly, an

**Table 10. Historical Data on GDP and Its Components** (At 1965 Constant Market Prices)

| | Value in billion won | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 |
| GDP | 628.49 | 686.24 | 743.78 | 798.20 | 900.74 | 973.63 | 1,105.08 | 1,283.15 | 1,412.16 | 1,563.61 |
| (1) Total consumption | 639.40 | 661.58 | 691.62 | 745.10 | 801.75 | 877.34 | 979.22 | 1,088.44 | 1,203.64 | 1,337.97 |
| (2) Total investment | 77.99 | 137.27 | 114.41 | 118.48 | 207.38 | 241.72 | 344.12 | 451.47 | 455.58 | 491.34 |
| (3) Exports | 36.71 | 39.44 | 48.75 | 68.61 | 104.49 | 141.83 | 200.83 | 264.95 | 325.75 | 392.50 |
| (4) Imports (−) | 120.20 | 153.19 | 114.04 | 128.93 | 203.30 | 274.05 | 399.93 | 498.82 | 548.95 | 660.98 |
| Domestic savings | −10.91 | 24.66 | 52.16 | 53.10 | 98.99 | 96.29 | 125.86 | 194.71 | 208.52 | 225.64 |
| Trade gap | −83.49 | −113.75 | −65.29 | −60.32 | −98.81 | −132.22 | −199.10 | −233.87 | −223.20 | −268.48 |

Source: The Bank of Korea, *Economic Statistics Yearbook, op.cit.* ("National Income")

Notes: Components, (1)−(4) do not add up to GDP due to statistical discrepancies. Exports and imports comprise goods and services. Total consumption includes private and government consumptions. Total investment is consisted of gross domestic fixed capital formation and increase in stock. Domestic savings=GDP−total consumption.

elaborate input-output model.[19]

Since all projections are guesswork because no satisfactory framework for the computation of an optimally correct development process exists, and moreover since guesses about foreign trade are even more prone to error than others because they require knowledge of what is happening in other countries, a precise scientific content could not be given to our projections. However, a sort of sensible and reasonable, if an arbitrary, projections is attempted on the basis of relevant past data and planned targets in the Third Five Year Economic Development Plan of Korea(1972-76). The points of importance to be considered of are consistency and feasibility in Korea's development context, for the past and the present are the key to the future.

### *A very simple aggregative model*

It includes only broad categories of expenditure on GDP. The causal effect order in the model is as follows: for a given rate of growth of GDP, the required investment is determined; consumption and imports are determined when the GDP is known. Since exports are exogenously determined, ex ante, the trade gap and the savings/investment gap can be calculated from the difference between exports and imports and the difference between savings and investment respectively. According to Table 10 below, we can present the projection model as follows.

(19) The essential references I have consulted in the process are M. Bruno, *Interdependence, Resource Use and Structural Change in Israel* (Jerusalem: Bank of Israel, 1962), Ch. VI and Mathematical Appendix, pp. 148-174; K.B. Griffin and J.L. Enos, *Planning Development* (London: Addison-Wesley Publishing Company, 1970), Ch. 6 section 1, pp. 77-89; K. J. Lancaster, *Mathematical Economics*(New York: The Macmillan Company, 1968), Ch. 6, 79-97; W. Leontief, *Input-Output Economics*(New York: Oxford University Press, 1966), Ch. 7, pp. 134-153; W.A. Lewis, *Development Planning-The Essentials of Economic Policy* (New York: Harper & Row, Publishers, 1966), Ch. III section 5, pp. 182-194; H. Pack, *Structural Change and Economic Policy in Israel*(New Haven: Yale University Press, 1971), Ch. 3, pp. 46-72; and United Nations Economic Commission for Asia and the Far East, *Feasible Growth and Trade Gap Projections in the ECAFE Region*(Bangkok, 1968), Part II, Ch. V, pp. 102-153.

1. $C_t=a_1+b_1X_t$

$C_t^*=143.708+.75175X_t$ $\bar{R}^2=.99614$ ……(1)
(.2701) (.01559) $\hat{S}=.01504$

2. $M_t=a_2+b_2X_t$

$M_t^*=-315.474+.61982X_t$ $\bar{R}^2=.9672$ ……(2)
(1.6042) (.03798) $\hat{S}=.03665$

3. $E_t=E_0(1+r)^t$

$E_t^*=392.50(1+0.2)^t$, $E_t^*=392.50(1+0.15)^t$ ……(3)

4. $X_t=a_3+b_3I_{t-1}$ $I_t^*=3.0(X_{t+1}-X_t)$ ……(4)

where $X$=gross domestic product, $C$=total consumption, $M$=imports of goods and services, $E$=exports of goods and services, $I$=gross domestic capital formation, subscripts, $t$ and $o$=time, $a_1$, $a_2$ and $a_3$=constants, $b_1$=marginal propensity to consume, $b_2$=marginal propensity to import, $b_3$=marginal capital-output ratio, $r$=growth rate of exports per annum, and the projection equations (1), (2), (3) and (4) make up the system of equations with asterisk marks on $C$, $M$, $E$ and $I$, that is solved to determine the values of GDP and its components for 1980.

Estimates are given of the trade gap for two alternative specifications of the rate of growth of the Korean economy to be attained by 1980: 8 and 9 per cent target rates of growth of GDP. These annual growth rates are assumed on the basis of the past trend and of the planned annual rate in the Third Five-Year Economic Development Plan, 1972-76: 4.2% in 1961, 3.5% in 1962, 9.1% in 1963, 8.3% in 1964, 7.4% in 1965, 13.4% in 1966, 8.9% in 1967, 13.3% in 1968, 15.9% in 1969, 8.9% in 1970, 9.8% in 1971(1st 5 year plan 1962-66, averaged 8.3%, and 2nd 5 year plan, 1967-71, averaged 11.4%), and 8.6% a year during 1972-76. Our projected 8 and 9 per cent rates in the GDP growth also reflect the Korean government's concern about over-extended economic activities and its intention to seek a better balance between growth capabilities and a more manageable resource and balance of payments position.

As to a rate of growth of exports per annum it is not reasonable to deter-

mine the future trend of exports on the basis of the past unusually high trend(over 30% in the 1960s) for the reasons to be mentioned subsequently: exports growth rate of 24.5% in 1961, 34.1% in 1962, 58.4% in 1963, 37.2% in 1964, 47.1% in 1965, 43.0% in 1966, 27.9% in 1967, 42.2% in 1968, 36.7% in 1969, 34.2% in 1970 and 34.9% in 1971. We have in our projection rather conservative growth rates of 15% and 20%, which are lower than the reduced growth rate of about 25% a year during the Third Five-Year Plan period.

And from the data the value of $b_3(=I_t/X_{t+1}-X_t)$ turns out to be 2.2353, which implies a capital-output ratio of about 2.24. But in the light of much emphasis of the Korean economy in the seventies on heavy and chemical industries, a capital-output ratio of 3.0 is used for our projection. The results are given in Table 11 below.

**Table 11. Trade Gap for 1980 by a Simple Aggregative Model**

(1965 Constant Market Prices in billion won)

| GDP and its components | Growth rate of GDP 8% | Growth rate of GDP 9% |
|---|---|---|
| GDP.....X | 3,125.6632 | 3,395.9937 |
| Consumption.....C | 2,493.4253 | 2,696.6462 |
| Investment.....I | 750.1590 | 916.9182 |
| Exports .....($E^1$ / $E^2$) | 1,380.7662<br>2,025.2137 | 1,380.7662<br>2,025.2137 |
| Imports .....M | 1,621.8745 | 1,789.4308 |
| Trade gap(ex-ante).....($E^1$-M / $E^2$-M) | −241.1083<br>403.3392 | −408.6646<br>235.7829 |

Notes: $E^1$ and $E^2$ stand for exports at an average annual rate of 15% and at 20% per annum respectively. From the Table we can derive savings/investment gap by calculating the difference between savings $(X-C)$ and $I$; −117.921 for growth rate of GDP 8% and −217.5707 for growth rate of GDP 9%. Ex-post the two gaps(trade gap and savings/investment gap) must be identical, but ex-ante they may be specified in such a way as not to coincide.

### *An input-output model*

The input-output approach seems to be a more appropriate method for our projection because, as an interdependence system, it provides mutually consistent values for the most important economic magnitudes, namely, total

output, intermediate demand, final demand and value added. Besides, it accounts fully for the precise degree of interdependence among the various sectors of the economy. Of course, it should be realized that the system suffers from limitations arising from its assumptions(constancy of the technical input coefficients, production function of constant returns to scale, no possible substitution between processes or industries, and no external economies and diseconomies) which are necessary so that tabulated inputs and outputs will balance at any overall level of economic activity.

Hence, we inevitably assume in our projection that the process actually being used in each industry of the system will remain the only process used. This is a heroic assumption for the fast-growing economies that are experiencing, in the course of development, a rapid structural transformation and that will almost surely see a change in the stability of their economic systems in the course of time. With this understanding, we shall attempt to project the trade gap for 1980 by using the interindustry relations table for the 1968's Korean economy, to be more specific, the consolidated input-output table for 1968.

We can proceed along the planning-forward approach, $(I-A)X \rightarrow Y$ as distinguished from the planning-backward approach, $(I-A)^{-1}\ Y \rightarrow X$. The procedure is to start with the projected total output of each sector and end with its trade gap, and the details are as follows: (1) project a reasonable growth rate for each sector of the consolidated table in terms of its output(domestic product) and get calculated output values of ten sectors, (2) we can at once fill in the vertical column standing above each sector in input-total row (=domestic output) by applying its input coefficients, (3) we add up all outputs in row to get total intermediate demand. (4) we get total final demand which in our case had already taken into account(minus) imports, by subtracting total intermediate demand from total output, and finally (5) by applying input coefficients of exports and imports to the total final demand, we have the trade gap for 1980.

And once the sectoral outputs for the terminal year are known, the sectoral value added at market prices for the year is automatically obtained by sub-

**Table 12. Input Coefficients Matrix for 1968**

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Agriculture | 0.15234940 | 0.05838710 | 0.27630209 | 0.03866395 | 0.00682828 |
| 2. Mining | 0.00081909 | 0.00216140 | 0.00454999 | 0.00217400 | 0.00298509 |
| 3. Food products | 0.02134931 | — | 0.11736190 | 0.00339252 | 0.01150427 |
| 4. Textiles | 0.00486718 | 0.00639611 | 0.00366367 | 0.29879287 | 0.00922911 |
| 5. Other consumption goods | 0.00190227 | 0.00462318 | 0.02442797 | 0.00727286 | 0.16070993 |
| 6. Chemicals | 0.02197109 | 0.04615499 | 0.02156587 | 0.01720209 | 0.04310607 |
| 7. Metal bloc | 0.00175072 | 0.04531257 | 0.00325667 | 0.00150760 | 0.01594392 |
| 8. Machineries | 0.00072694 | 0.03200992 | 0.00360448 | 0.00722454 | 0.01065929 |
| 9. Other capital goods | 0.00096165 | 0.01390793 | 0.01123980 | 0.00756531 | 0.04416112 |
| 10. Construction, energy & services | 0.03317265 | 0.19241184 | 0.10420953 | 0.10899883 | 0.19052143 |
| Import | 0.02793045 | 0.03876288 | 0.10526902 | 0.22794958 | 0.19551346 |

| | 6 | 7 | 8 | 9 | 10 | Export |
|---|---|---|---|---|---|---|
| 1. Agriculture | 0.01205719 | 0.00108743 | 0.00103019 | 0.00738364 | 0.02711914 | 0.02752442 |
| 2. Mining | 0.01069798 | 0.03418518 | 0.00272057 | 0.14221292 | 0.00641114 | 0.03950735 |
| 3. Food products | 0.00266107 | 0.00016228 | 0.00035430 | 0.00664813 | 0.00221097 | 0.06859495 |
| 4. Textiles | 0.00167329 | 0.00258891 | 0.00368787 | 0.00650266 | 0.00463874 | 0.24048070 |
| 5. Other consumption goods | 0.01941495 | 0.00236142 | 0.01168952 | 0.02277359 | 0.01937991 | 0.05261203 |
| 6. Chemicals | 0.07013452 | 0.02984454 | 0.02140878 | 0.02786369 | 0.02534399 | 0.01288235 |
| 7. Metal bloc | 0.00882622 | 0.22006977 | 0.11324903 | 0.01336628 | 0.01846010 | 0.01642526 |
| 8. Machineries | 0.00502170 | 0.01118981 | 0.16601801 | 0.00709814 | 0.02214086 | 0.02828161 |
| 9. Other capital goods | 0.01000153 | 0.01916736 | 0.03606696 | 0.05552346 | 0.05729361 | 0.11311402 |
| 10. Construction, energy & services | 0.14250586 | 0.20557974 | 0.14236965 | 0.19079322 | 0.10829733 | 0.40057731 |
| Import | 0.32426495 | 0.24613331 | 0.21652996 | 0.27644808 | 0.04914708 | — |

Note : The correspondence between our aggregation (ten sectors) and the original one (forty-three sectors) is as follows: 1. rice, barley & wheat (1), other agriculture (2), forestry (3) and fishery (4); 2. coal (5) and other minerals (6); 3. processed foods (7), beverages (8) and tabacco (9); 4. fibre spinning (10), textile fabrics (11) and finished textile products (12); 5. wood products & furniture (14), paper products (15), printing & publishing (16) and miscellaneous manufacturing (32): 6. basic chemicals (19), other chemical products (20), chemical fertilizer (21) and petroleum products (22); 7. iron & steel (25), steel products (26), non-ferrous metals & primary products (27) and finished metal products (28); 8. non-electrical machinery (29), electrical machinery (30) and transport equipment (31); 9. lumber & plywood (13), leather & leather products (17), rubber products (18), coal products (23) and glass, clay & stone products (24); 10. building & maintenance (33), other construction (34), electricity (35), banking, insurance & real estates (36), water & sanitary services (37), communication (38), transportation (39), trade (40), other services (41), scrap (42), and unclassifiable (43). The number in blanket matches the number in the original table.

tracting total intermediate input(sum of vertical column value of each sector) from input-total row. In matrix form this becomes

$$V_j = X_j(1 - \sum_{i=1}^{10} a_{ij}) \qquad (j = 1, 2, 3, \cdots\cdots, 10)$$

where $V_j$ denotes value added at market prices of sector $j$, $X_j$ sectoral output of sector $j$, and $a_{ij}$ input coefficients of flow from $i$th sector to $j$th sector.

Input coefficients matrix has been derived as in Table 12, above. The projection procedure produces the results that are given below in Table 13. Here we assume 5% growth rate per annum for agricultural sector, again 5% for mining sector, 10% for consumption-goods sectors (food products, textiles and other consumption-goods), 15% for capital-goods sectors(chemicals, metal bloc, machineries and other capital-goods), and 10% for construction, energy and services sector. Initially I wanted to take all the previous input-output tables for 1960, 1963 and 1966 as well as for 1968, as the basis for estimating the future growth rates of ten sectors. These tables, however, are not directly comparable to each other and to the 1968 table since they are expressed in different constant prices. Therefore, I entirely rely upon the most recent 1968 table as the projection basis, while taking account of the past trends manifested in National Income Statistics and the target rates in the Third Plan. It is in a sense preferable to do so, in view of the fact that the Korean economy has been going through a period of rapid structural change.

It has been shown by a simple aggregative model that for a target rate of growth of GDP of 8-9 per cent per annum for the Korean economy, the ex-ante trade gap would amount in absolute terms to trade deficits of 241 (about $600 million) and 409 billion won(about $1 billion) in 1965 market prices respectively, assuming that exports increase by 15 per cent per annum during the projection period 1972-80, and marginal rates of savings and imports of 25% and 60% respectively remain unchanged, and as a percentage of GDP it is projected at −7.7% and −12.4% in 1980. And if exports are

**Table 13. Trade Gap for 1980 by an Input-Output Model**

(1968 Market Prices in million won)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 170,420 | 21,643 | 237,353 | 28,845 | 2,285 | 7,086 | 384 | 1,432 | 5,811 |
| 2 | 916 | 172 | 3,909 | 1,622 | 999 | 6,287 | 12,059 | 1,919 | 111,932 |
| 3 | 23,882 | — | 100,818 | 2,531 | 3,850 | 1,564 | 057 | 250 | 5,233 |
| 4 | 5,445 | 509 | 3,147 | 222,915 | 3,089 | 983 | 913 | 2,601 | 5,118 |
| 5 | 2,128 | 368 | 20,984 | 5,426 | 53,782 | 11,410 | 833 | 8,244 | 17,924 |
| 6 | 24,577 | 3,670 | 18,526 | 12,834 | 14,425 | 41,217 | 10,528 | 15,098 | 21,931 |
| 7 | 1,958 | 3,603 | 2,798 | 1,125 | 5,336 | 5,187 | 77,634 | 79,865 | 10,520 |
| 8 | 813 | 2,545 | 3,096 | 5,390 | 3,567 | 2,951 | 3,947 | 117,079 | 5,587 |
| 9 | 1,076 | 1,106 | 9,655 | 5,644 | 14,779 | 5,878 | 6,762 | 25,435 | 43,701 |
| 10 | 37,107 | 15,300 | 89,520 | 81,319 | 63,758 | 83,749 | 72,522 | 100,401 | 150,168 |
| Intermediate inputs | 268,322 | 31,916 | 489,806 | 367,651 | 165,870 | 166,312 | 185,639 | 352,324 | 377,925 |
| Value added(at market price) | 850,293 | 47,599 | 369,229 | 379,400 | 168,781 | 421,375 | 167,130 | 352,892 | 409,145 |
| Input totals | 1,118,615 | 79,515 | 859,035 | 746,051 | 334,651 | 587,687 | 352,769 | 705,216 | 787,070 |

| | 10 | Interme-diate demands | (Exports) | (Less imports) | Trade gap (E-M) | Final demands | Output (domestic products) |
|---|---|---|---|---|---|---|---|
| 1 | 96,103 | 554,362 | 18,934 | 31,243 | −12,249 | 564,253 | 1,118,615 |
| 2 | 22,719 | 162,534 | 27,264 | 3,082 | 24,182 | −83,019 | 79,515 |
| 3 | 7,835 | 146,020 | 47,336 | 90,430 | −43,094 | 713,015 | 859,035 |
| 4 | 16,438 | 261,158 | 165,958 | 171,554 | −5,601 | 484,893 | 746,051 |
| 5 | 58,677 | 189,776 | 36,367 | 65,429 | −29,122 | 144,875 | 334,651 |
| 6 | 89,812 | 252,618 | 8,890 | 190,566 | −181,676 | 335,069 | 587,687 |
| 7 | 65,418 | 253,444 | 11,335 | 86,828 | −75,493 | 99,325 | 352,769 |
| 8 | 78,461 | 223,436 | 19,517 | 152,700 | −133,183 | 481,780 | 705,216 |
| 9 | 203,033 | 317,069 | 78,058 | 217,584 | −139,526 | 470,001 | 787,070 |
| 10 | 383,777 | 1,077,621 | 276,434 | 174,164 | 102,270 | 2,466,113 | 3,543,734 |
| Intermediate inputs | 1,032,273 | 3,438,038 | 690,088 | 1,183,580 | −493,492 | 5,676,305 | 9,114,343 |
| Value added(at market price) | 2,511,461 | 5,676,305 | — | — | — | — | 5,676,305 |
| Input totals | 3,543,734 | 9,114,343 | 690,088 | 1,183,580 | −493,492 | 5,676,305 | 14,790,648 |

assumed to increase by 20 per cent per annum, ceteris paribus, the trade gap would end up with trade surplus of 403 and 236 billion won respectively for 8 and 9 per cent target rates of GDP growth. This indicates that somewhere between 15 and 20 per cent rates of exports would lead to balancing imports against them in 1980. On the other hand, the ex-ante savings/investment gap as percentage of GDP is projected in 1980 to be −3.8 and

−6.4 per cent for the alternative growth rates of GDP. It follows, therefore, that for achieving a target rate of GDP growth of 8-9 per cent per annum, the Korean economy has to maintain the marginal rate of saving at well over 25% and promote exports to increase at a higher rate than 15%, if at the same time the dependence on foreign capital inflows is to be reduced.

It has been also shown by an input-output model that for the arbitrary, but reasonable growth rates of ten aggregated sectors, the ex-ante trade gap in 1980 is projected to be −494 billion won(slightly over $1.2 billion), about −8.7% of GDP. Value added in GDP by industrial groups in 1980 would be about 18% for agriculture, forestry and fishery ($A$), 32% for mining and manufacturing ($I$), and 50% for social overhead capital and other services ($S$). Thus, the sectoral structure in 1980 will be shown as $S>I>A$ for short, into which the 1960's pattern, $S>A>I$, is to be transformed. It would then belong to the category of structural patterns of advanced economies.

And if we inquire into the internal transformation of the manufacturing industry, which is concerned with the deepening process of the industrial growth, by calculating the ratio of consumer goods production to capital goods(the Hoffmann ratio), Korea's industrial pattern of output of 1 : 1.2 ratio will approach the Hoffmann's fourth stage by 1980, to which Korea move up in a decade from the second stage by the later 1960s. However, the Korean economy would not see a high degree of structural interdependence among productive sectors, to the contrary of our expectation that as income levels rise, the industrial sectors become much more interdependent; the proportion of total production for total intermediate demand(or input) would be about less than 40% in 1980, which is almost same proportion as in 1968. This is nothing surprising because the constancy of the technical input coefficients is assumed in our projection, which permits the inclusion of neither price changes nor the consequences of technological progress and changes in the product mix. In other words, the structural interdependence

among productive sectors would be expected to remain as it was.

Our findings of the trade gap projection to 1980 bring out the significance of exports as a leading sector of the Korean economy in the seventies, because exports have inseparable relations with foreign capital in that it is a means to promote capability to repay foreign debt derived from the trade deficits and to float the domestic surplus savings in international markets. In other words, the import surplus economy of Korea has become structurally dependent on capital imports which are largely in the form of loans and investment, and hence to be able to move on to balancing its international accounts, thus building up an endurable and integrated economy, it must adjust its structures, that is, increase the share of tradable goods and services in national product so that it can replace import surplus by larger exports and by import substitutes and increase domestic savings. To achieve this a deliberate and positive development strategy is necessary.

A negative approach would be the sudden curtailment of imports to the present level of exports. But it would in Korea's case of a sizable import surplus drastically reduce the national product, creating large-scale unemployment as a consequence of the lack of imported goods and of the decline of investments. What is required of the Korean economy is obviously a positive approach. The Korean government should do whatever necessary for this end, while being keenly aware of the fact that the high growth of exports is a sine qua non of its sustained economic growth and repayment of debts in the seventies.

Two main lines of the development strategy are suggested for the Korean economy: (1) move toward a relatively greater emphasis on intermediate and heavy manufactures and (2) a "balanced" growth of agriculture in the intersectoral structural context. This strategy has been implicitly and explicitly emphasized on several occasions. Now I intend to briefly bring home the importance of the strategy for the viable economy of Korea in the future.

The reasons for (1) are declining opportunities in the domestic market for

expanding light industry faster than the increase in domestic incomes, and the uncertainties that international markets would be able to sustain rapid industrial growth in Korea in the longer run on the basis of light industry. The products of light manufacturing industry such as textiles, clothing, and plywood, which played the leading role in export expansion of the 1960s, showed a rapid rate of export expansion, taking advantages of import dependency of the U.S. and Japan for labor-intensive light manufactures. However, these export commodities are characterized by low income and linkage effects, low income elasticity and low expansion rates of demand in world trade. Besides, since these products require little capital, the entrances of other developing countries into these fields will intensify competition in international markets, while domestic manufactures face increases in wage rates expected to occur in the industrialization.

Theses considerations and realities point to the necessity to shift the commodity composition to products of heavy and chemical industries. This progression is also a natural course of industrial growth in the light of moving up process of industrialization. But it should be realized that the shift toward heavier industrialization may not be easy. Capital intensities in the heavier industries will be higher, lags between investment and output will be longer and the technical problems of capacity utilization may be more complex. While industrializing exports will continue for sometime to be mainly the products of light industry, the increasing reliance on domestic capital and intermediate goods may adversely affect costs relative to world competition. These are already high and may for a time be somewhat higher. However Korea has little choice but to brave the uncertainties of deepening the industrial structure if it is to stay on the fairly rapid course of development which it seems capable.

As for (2), we can say that the lopsided emphasis on industrialization 1960s has inhibited the growth of agriculture and rural incomes and her the development of domestic markets for manufactures. These are proble

now being faced in the Korean economy. And when we discussed the moving-up process of industrialization, we took a note of the skipping of the prerequisite stages, namely, greater productivity and primary export, which has adversely affected the smooth development. It has been emphasized that increased production and self-sufficiency in the agricultural sector will make it possible to avoid reliance on grain import, to improve the balance of payment situation, and to supply sufficient raw materials needed for industrialization.

Korea should further pursue the commendable "New Community Movement"[20] that was vigorously initiated in 1971, while efficiently tackling many problems involved in the agricultural development; expansion of irrigation works, maintenance of soil fertility, improvement of plant breeding and increased supply of fertilizers.

In addition to the two main lines of the development strategy just discussed, scientific technology should be developed and promoted. The significance of this promotion is closely related to the possibility of a much greater positive effect of technological innovations on the balance of payments through price reduction in export commodities and exports of new products, and to the development and spread of new agricultural technology, to be specific, improved techniques of cultivation, extension of irrigation, more liberal use of fertilizers and pesticides, and the introduction of better seeds suited for the Korean soil.

(20) W.S. Tae, *op, cit.*, pp. 153. The New Community Movement aims at strengthening the complementary function of the rural sector for accelerated economic growth in the process of industrialization through self-sufficiency in grain, increase in agricultural income, streamlining of the distribution channels of agricultural and marine products, improvement of rural living environment, and the establishment of a cooperative system.