

World Bank Reprint Series: Number Fifty-four

Larry E. Westphal

The Republic of Korea's Experience with Export-Led Industrial Development

Reprinted from *World Development* 6 (1978)

Public Disclosure Authorized

Public Disclosure Authorized

The most recent editions of *Catalog of Publications*, describing the full range of World Bank publications, and *World Bank Research Program*, describing each of the continuing research programs of the Bank, are available without charge from: The World Bank, Publications Unit, 1818 H Street, N.W., Washington, D.C. 20433 U.S.A.

WORLD BANK BOOKS ABOUT DEVELOPMENT

Research Publications

- International Comparisons of Real Product and Purchasing Power* by Irving B. Kravis, Alan Heston, and Robert Summers, published by The Johns Hopkins University Press, 1978
- Experiments in Family Planning: Lessons from the Developing World* by Roberto Cuca and Catherine S. Pierce, published by The Johns Hopkins University Press, 1978
- Income Distribution Policy in the Developing Countries: A Case Study of Korea* by Irma Adelman and Sherman Robinson, published by Stanford University Press (in the Commonwealth, Oxford University Press), 1978
- Interdependence in Planning: Multilevel Programming Studies of the Ivory Coast* by Louis M. Goreux, published by The Johns Hopkins University Press, 1977
- The Mining Industry and the Developing Countries* by Rex Bosson and Bension Varon, published by Oxford University Press, 1977
- Patterns in Household Demand and Saving* by Constantino Lluch, Alan Powell, and Ross Williams, published by Oxford University Press, 1977
- Unskilled Labor for Development: Its Economic Cost* by Orville McDiarmid, published by The Johns Hopkins University Press, 1977
- Electricity Economics: Essays and Case Studies* by Ralph Turvey and Dennis Anderson, published by The Johns Hopkins University Press, 1977
- Housing for Low-Income Urban Families: Economics and Policy in the Developing World* by Orville F. Grimes, Jr., published by The Johns Hopkins University Press, 1976
- Village Water Supply: Economics and Policy in the Developing World* by Robert Saunders and Jeremy Warford, published by The Johns Hopkins University Press, 1976
- Economic Analysis of Projects* by Lyn Squire and Herman G. van der Tak, published by The Johns Hopkins University Press, 1975
- The Design of Rural Development: Lessons from Africa* by Uma Lele, published by The Johns Hopkins University Press, 1975
- Economy-Wide Models and Development Planning* edited by Charles R. Blitzer, Peter B. Clark, and Lance Taylor, published by Oxford University Press, 1975
- Patterns of Development, 1950-1970* by Hollis Chenery and Moises Syrquin with Hazel Elkington, published by Oxford University Press, 1975
- A System of International Comparisons of Gross Product and Purchasing Power* by Irving B. Kravis, Zoltan Kenezsey, Alan Heston, and Robert Summers, published by The Johns Hopkins University Press, 1975

Country Economic Reports

- Commonwealth Caribbean: The Interaction Experience* by Sidney E. Chernick and others, published by The Johns Hopkins University Press, 1978

(continued on inside back cover)

ERRATA

The Republic of Korea's Experience with Export-Led Industrial Development

Page 365, table in text, "Direct contributions to growth of
manufactured output:"

The contribution of import substitution for the period 1963-68 should be
3.7%, not 33.7%.

Page 370, Table 15, "Factor use in manufacturing:"

Value added in 1970 should be 1,803.0.

The Republic of Korea's Experience with Export-Led Industrial Development

LARRY E. WESTPHAL*

The World Bank

Summary - This paper is a summary of findings from the author's research conducted intermittently over the past seven years and reported elsewhere in greater detail for more specialized audiences. It begins with a brief history of the Republic of Korea's industrial incentive policies, followed by an examination of historical trends in the real effective exchange rates for exports and imports. Estimates of nominal and effective incentive rates for 1968 are summarized, and the changes that have taken place in the structure of the Republic of Korea's trade and production are quantified and related to its industrial incentive policies. The conclusion of the paper is that the Republic of Korea's outward-looking development strategy and the policy measures adopted to implement it have resulted in a generally efficient and equitable process of rapid industrialization.

It is widely known that Korea has achieved remarkable success as an exporter of manufactured products. Less widely appreciated, however, are the circumstances underlying Korea's export performance and the role that trade expansion has played in its industrial development. Several major pieces of research into these questions have recently been completed, and the purpose of this paper is to summarize their findings.¹ As most of the research surveyed here was conducted during the early 1970s, detailed empirical results largely pertain to the 1950s and 1960s. However, where and as possible, this paper updates the analysis into the 1970s.

The discussion is organized as follows: first is a short sketch of Korea's industrial growth performance, followed by a brief history of industrial incentive policies. Succeeding sections present time series estimates of the real effective exchange rate for exports and summarize estimates for 1968 of effective protection and subsidy rates. Following a somewhat more detailed appraisal of export performance, the paper turns to examine the role of trade expansion in Korea's industrial development. Here the focus is on contributions to output growth as well as to improved factor utilization. The paper then concludes with a discussion of the relevance of Korea's experience to policy-making in other developing countries.

INDUSTRIAL GROWTH TRENDS

The Republic of Korea, often referred to as South Korea (and here simply as Korea), was created at the end of World War II by the partition of the Korean peninsula, which had been occupied by the Japanese since the early 1900s. Under Japan's colonial administration, agriculture had been extensively developed in the southern half of the peninsula to promote exports of foodstuffs to Japan. In turn, there

*As may be seen in the bibliography, collaborators in the research summarized here have included Kwang Suk Kim, Charles R. Frank, Jr., Yung W. Rhee, and David C. Cole. The research also benefited immensely from having been conducted in large measure as a country study under the aegis of two large-scale comparative analyses: *Development Strategies in Semi-Industrial Countries*, sponsored by the World Bank and directed by Bela Balassa; and *Foreign Trade Regimes and Economic Development*, sponsored jointly by the United States Agency for International Development and the National Bureau of Economic Research, and directed by Jagdish N. Bhagwati and Anne O. Krueger. Helpful comments have also been received from Benjamin B. King, Ian Little, and T. N. Srinivasan. This paper is a revision of an earlier version which appeared as World Bank Staff Working Paper No. 249. Neither the World Bank, nor any of its affiliates, nor any of the other sponsors of the underlying research, are responsible for the views expressed in this paper.

was little industrial development beyond traditional activities until 1920, when a law requiring administrative approval for the establishment of new firms was abolished. The growth of manufacturing further accelerated after 1930 owing to change in Japanese policy that greatly favored imports from the Yen Bloc. None the less, by 1940 the South had only a small 'modern' manufacturing sector, concentrated in light industries and machinery production. Most of the heavy industry and more than 90% of the electricity generating capacity were in the North [see Kuznets (1977)].

Economic activity in the South was dominated until the mid-1950s by adjustments first to partition and then to dislocations caused by the Korean War. The economy's structure in 1955 was thus much the same as it had been left at the end of the Japanese occupation. As may be seen in Table 1, manufacturing activity accounted for only 8% of GNP in 1955, while nearly half of GNP originated in the primary sectors. Due to the disrupting effects of the Korean War, exports were but 1.4% of GNP, and manufactured exports were virtually non-existent.

Industrial expansion from 1955 through the early 1960s was largely oriented toward the domestic market, with import substitution for light manufactured and non-durable consumer goods playing a major role. Exports in 1956 amounted to less than half their real value in 1950, the year preceding the Korean War, but in the late 1950s they began growing at a gradually accelerating rate. By 1960 the real value of exports surpassed that in 1950 by nearly 16%. However, in absolute terms as well as relative to GNP, exports remained small: in current US dollars, total exports (including merchandise and non-factor services) amounted to roughly \$100 million in 1960, of which only 5% were manufactured products.² The share of total exports in GNP at current prices was only 3.3%.

Manufactured exports rose rapidly in the early 1960s, albeit from a small base, but the real 'turning point' in both export and industrial growth came around 1965, during a period of trade liberalization and other major policy reforms. In the decade following 1965, manufactured export growth coupled with rising domestic demand fueled industrialization much faster than before. The compound annual rate of growth in the index of manufacturing output was 11% from 1955 to 1965; it increased to 24% from 1965 to 1975. Underlying the acceleration of manufacturing output growth, the share of exports in manufacturing (gross)

output, which was nil in 1955, rose from roughly 6% in 1965 to nearly 25% in 1975 [Bank of Korea, *National Income in Korea* (1976)]. Within a decade, from 1965 to 1975, the ratio of total exports to GNP more than trebled and the share of GNP originating in the manufacturing sector more than doubled. Manufactured products constituted 42% of total exports in 1965 and 74% in 1975.

Nearly every indicator of development performance improved dramatically after the mid-1960s (see Table 1). Thus, for example, the annual growth rate of real *per capita* income increased from 2.1% in the decade preceding 1965 to 8.1% in the decade that followed. By 1975, Korea's population of over 34 million enjoyed a *per capita* income in excess of \$500 in current US dollars. The economy also performed well with respect to employment and income distribution. Between 1965 and 1975, total employment is estimated to have increased by 3.7% per annum while the population aged 14 and older was growing at 3.2% annually. Real wages in mining and manufacturing rose at an average annual rate of 7.8% during this period.³

INDUSTRIAL INCENTIVE POLICIES

Industrial incentive policies during the last half of the 1950s were those typically associated with an import-substitution strategy. Large-scale purchases of *won* (the domestic currency) at the official exchange rate by the resident UN military establishment provided a major motivation to maintain an overvalued exchange rate, from which a complex structure of multiple exchange rates evolved to deal with recurrent balance-of-payments problems. In addition, high tariffs were imposed on imports having domestically-produced similars, mostly finished consumer goods, and the government increasingly relied upon quantitative import restrictions as an additional measure to offset the progressively greater overvaluation of the *won*. The principal incentive to exports during this period came from the multiple exchange rate system, under which export earnings were converted into foreign exchange certificates that were traded at a premium in a free market. In addition, modest direct cash subsidies were also used.

The first half of the 1960s was a period of social, political and economic instability during which there were a number of attempts at policy reform and economic liberalization. Upon taking control in 1961, the military

Table 1. *Major economic indicators: 1955 to 1975*

<i>Computation of per capita income</i>	1955	1960	1965	1970	1975
GNP (billion won at 1970 prices)	938.2	1,129.7	1,529.7	2,589.3	4,107.7
Population (million persons)	21.5	24.9	28.3	31.4	34.7
GNP <i>per capita</i> (thousand won at 1970 prices)	43.6	45.3	54.0	82.4	118.4
<i>Percentage shares in GNP at 1970 prices</i>					
Value added in:	%	%	%	%	%
Primary production	47.5	42.6	41.0	29.5	23.0
Manufacturing	7.9	10.8	13.9	21.6	31.9
Social overhead*	4.2	6.0	8.5	13.3	13.7
Services	40.4	40.6	36.6	35.9	31.4
Gross investment	10.0	8.6	12.9	27.2	26.3
Total exports	1.4	2.4	5.2	14.7	28.3
Total imports	11.2	10.4	9.8	24.8	27.2
<i>Percentage shares in GNP at current prices</i>					
	%	%	%	%	%
Government revenue	10.5	19.8	16.1	20.1	19.7
Government savings	0.6	4.1	5.7	7.5	3.6
Total domestic savings	3.7	1.6	7.7	17.1	17.7
Gross investment	11.9	10.9	15.1	27.2	27.1
Total exports	1.6	3.3	8.5	14.7	30.2
Total imports	9.8	12.6	15.9	24.8	39.6
<i>Compound annual growth rates</i>					
	1955-60%	1960-65%	1965-70%	1970-75%	
GNP (at 1970 prices)	3.8	6.2	11.1	9.7	
GNP <i>per capita</i> (at 1970 prices)	0.7	3.6	8.8	7.5	
Manufacturing value added (at 1970 prices)	10.3	11.8	21.3	18.5	
Index of manufacturing output	12.0	9.5	24.2	23.2	
Total exports (at 1970 prices)	16.3	24.0	36.5	25.0	
Population 14 years and older	-	2.5**	2.8	3.6	
Economically active population	-	2.7**	2.9	3.9	
Employment					
Total	-	2.4**	3.5	3.9	
Manufacturing	-	12.2**	10.7	11.4	
Real wages					
Average in mining and manufacturing	5.1†	1.1	7.1	8.4	
Agricultural labour	-	0.1	8.2	1.5	
Prices					
GNP deflator	12.0	19.3	13.7	15.3	
Wholesale price index	10.2	17.2	7.9	18.9	

Sources: Bank of Korea, *Economic Statistics Yearbook* (1967, 1969, 1976); *National Income in Korea* (1975); Economic Planning Board, *Korea Statistical Yearbook* (1975); and Hong (1976).

* Includes construction; electricity, gas, water, and sanitary services; transportation, storage and communication.

† For 1957-60.

** For 1960-66.

government immediately completed the task, begun under the civilian authorities who had replaced Syngman Rhee after the student revolution in 1960, of unifying the exchange rate. The transition to the unitary rate did not appreciably affect export incentives, since the rate established in 1961 was somewhat lower than the pre-existing free market rate on export earnings. In 1963, largely as a result of a decline in US grant aid, a balance-of-payments crisis led to the reintroduction of a multiple exchange rate system, while import controls were again tightened by means of licensing through semi-

annual trade programmes, variable tariffs, and selective import prohibitions.

The liberalization philosophy that had emerged but remained largely ineffective during the early 1960s took firm hold after the election of a civilian government under Chung Hee Park in early 1964. (President Park continues in power today.) The ensuing two years brought major and lasting policy changes in a number of areas. In addition to changes more directly related to trade policy, there were several key reforms aimed at increasing public and private savings. The administration

of government revenue collection was revised to insure a high ratio of revenue to GNP, and purposive measures were taken to hold down current government expenditures. An increase in commercial bank deposit and lending rates together with a price stabilization programme raised the real interest rate to approximately 10% per annum. By substantially increasing the domestic savings rate (see Table 1), these reforms were instrumental in financing the higher investment rates required for accelerated GNP growth.⁴

At the same time, policy-makers came firmly to accept that rapid economic development depended upon an export-oriented industrialization strategy. This view was predicated on the understanding that Korea's natural resource base was very poor and the realization that further opportunities for import substitution were only to be found in intermediate and durable goods, where the limited domestic market of the mid-1960s could not justify establishing plants large enough to realize technological economies of scale. A major associated policy change was the lasting establishment of a uniform exchange rate in 1964, when the official won-dollar exchange rate was nearly doubled for the second time in three years.

As had been the case in the earlier devaluation in 1960, the devaluation in 1964 was aimed primarily at simplifying the exchange regime and offsetting domestic inflation, rather than increasing the level of export incentives. In fact, exporters had begun to benefit from an expanded range of explicit export incentive mechanisms starting in 1959, when tariff exemptions on imports of raw materials used in export production were first granted. Other price incentive mechanisms were gradually added, so that by 1967 exporters operated under a virtual free trade regime, benefiting from free access to imported inputs, indirect tax and tariff exemptions, and reduced charges on overhead inputs as well as credit and direct tax preferences. (These mechanisms are described and analysed in greater detail in the next section.) Also, an export performance criterion was established as the basis for granting importers' licences and a system of export targets for individual firms in particular markets (by product and destination) was introduced. The concluding section of the paper discusses the importance of the latter.

As regards incentives to production for domestic sale, a small number of import-substituting industries have benefited from promotional activities (project identification, feasibility studies, etc.) under the aegis of

successive Five-Year Plans as well as from the same price incentive mechanisms that have applied to exports.⁵ But in most sectors the only price incentive to domestic sales has been the protection potentially afforded by import controls and tariffs. Import controls were gradually relaxed following the 1964 devaluation as the number of items eligible for import increased along with quota amounts. However, it was not until 1967 that a major step was taken in liberalizing import restrictions through a switch from the so-called 'positive' list system, under which only those commodities listed in the trade programme could be imported, to the 'negative' list system, under which all commodities not listed could automatically be imported without restriction. Import controls continue to this day, though they have gradually been liberalized. In turn, the tariff structure has remained substantially unchanged since its original creation in 1949, though there have been several minor reforms.

REAL EFFECTIVE EXCHANGE RATES

An incentive system that generally favoured exports over import substitution within manufacturing gradually came into being over the first half of the 1960s. In this section a quantitative assessment of the impact of this change in policy on export incentives is made using time series estimates of real effective exchange rates. But first, the incentive mechanisms introduced during this period will be described.

The most important incentives to exporters by 1967 included: unrestricted access to and tariff exemptions on imported intermediate and capital goods; exemption from payment of indirect taxes both on major intermediate inputs, whether imported or purchased domestically, and on export sales; generous wastage allowances in determining duty and indirect tax-free raw material imports, which permitted the use of some of these imports in production for the domestic market; reduced prices for several overhead inputs including electricity and railroad transport, which were intended at least in part to compensate for payment of indirect taxes included in the normal charges for these inputs; a 50% reduction in direct taxes on income earned in exporting, along with accelerated depreciation; and, immediate access to subsidized short- and medium-term credit to finance working capital and fixed investment respectively. In addition, the so-called

'export-import link' system entitled selected exporters to import certain popular items that were not otherwise approved for import. This system was used to subsidize exports during the late 1950s and much of the 1960s. It has since been used only intermittently on a more or less *ad hoc* basis to offset exporter's temporary losses due to market fluctuations or entry into new markets.

Some of these incentives are not genuine subsidies. Except where there is over-rebating, the exemption of export sales from indirect taxes on the same products sold domestically merely establishes tax neutrality under the destination principle that exempts exports from indirect taxes while such taxes are imposed on imports. In turn, exemption from tariffs on imported inputs and from indirect taxes on all inputs regardless of the source of the purchase does favour exports *vis-à-vis* production for domestic sale; so too does permitting exporters to have free access to imported inputs, while access is restricted in the case of production for domestic sale. *Vis-à-vis* world market prices, however, the effect of these measures is simply to subject exporters to a free trade regime: exporters purchase their (tradeable) inputs and sell their output at world market prices.

The effective exchange rate for exports is obtained by adding export subsidies per dollar of exports to the official exchange rate. It would therefore appear that the value of indirect tax and tariff exemptions should not be included in the calculation. However, while indirect tax and tariff exemptions do not add to exporters' revenues, they do reduce production costs below those involved in production for the domestic market. Thus, an increase in indirect tax or tariff rates paid to produce a given product for domestic sale makes its production for export using existing capacity more attractive, even though it does not increase the profit rate earned on export sales. In this sense, inclusion of these exemptions yields an index of the incentive to exporting *vis-à-vis* selling domestically, but not of export incentives as they affect profits from exporting. Two effective exchange rates for exports should thus be distinguished: a 'gross' rate, which includes indirect tax and tariff exemptions per dollar of exports; and, a 'net' rate, which does not include them. In turn, profits from exporting will be affected if such exemptions are granted or withdrawn over time, which makes the gross rate the only meaningful measure of incentives when there are changes in the scope of exemptions.

For lack of consistent time series data, our

estimates do not incorporate the subsidies due to the export import link system, the excess of wastage allowances over actual wastage in production for export, or price reductions on overhead inputs. Very little is known about the precise magnitude over time of the first of these subsidies. More is known about the subsidy due to wastage allowances, which has been estimated to have been equal to 2.4% of the total value of merchandise exports in 1968. There is also evidence that this subsidy has fluctuated over time, generally rising and falling in relative value with the degree of the won's overvaluation. In turn, the value of overhead price reductions has always been quite small in relative terms; it equalled only 0.4% of exports in 1968. [Westphal and Kim (1977), pp. 3-39.]

Table 2 shows the total value per dollar of exports of those incentives for which consistent time series information is available. For convenience, the value of incentives is shown as a percentage of the official exchange rate. Some discussion is in order regarding the estimation of direct tax and interest subsidies. The total subsidy owing to the 50% reduction in direct taxes had been calculated as the difference between tax liabilities in the absence of any such preference and actual direct tax payments. Similarly, the total interest subsidy has been computed as the difference between the interest that would have been paid on outstanding credits of various types, including both short and medium-term loans, at the non-preferential commercial bank lending rate and the interest actually paid. The resulting estimate understates credit subsidies because it does not reflect the fact that exporters benefit from immediate access to credit within very generous limits, while credit from formal-sector financial institutions has been subject, depending upon the period, to more or less stringent rationing for all other borrowers. Moreover, the non-preferential commercial bank lending rate is neither an equilibrium rate nor a robust proxy for the average rate on all producers' outstanding debt, the latter because of general recourse among those frustrated by credit rationing to an active informal money market on which interest rates have been as high as 40 to 50% per annum in real terms.

Because of the way in which the interest subsidy is measured, a change in its value per dollar of exports does not necessarily imply a change in the cost of borrowed capital to exporters, it may sometimes simply reflect a change in the non-preferential commercial bank lending rate. One should thus be careful to

Table 2. *Effective exchange rates for exports and imports* (Annual averages; won per US dollar)

	Official exchange rate (Nominal)	As a percent of the official exchange rate				Purchasing power parity adjusted (Real) effective exchange rates*			
		Per dollar of exports:			Per dollar of imports: Actual tariffs and tariff exemptions	For exports			For imports
		Exchange premia plus direct cash subsidies	Direct tax plus interest subsidies	Indirect tax and tariff exemptions		Including only revenue incentives	Excluding indirect tax and tariff exemptions (net)	Including indirect tax and tariff exemptions (gross)	
%	%	%	%	%					
1958	50.0	128.0	2.4	0.0	28.8	276.7	279.6	279.6	156.5
1959	50.0	169.4	2.6	—	65.6	321.8	324.9	—	197.9
1960	62.5	134.2	2.0	—	60.3	317.5	320.1	—	217.4
1961	127.5	7.3	0.8	—	15.3	287.4	289.3	—	282.2
1962	130.0	7.9	1.1	7.6	12.6	244.7	247.1	264.2	255.5
1963	130.0	33.8	2.8	9.1	13.9	253.5	258.8	276.1	215.9
1964	214.3	19.9	3.2	8.2	15.3	278.7	286.1	305.3	268.0
1965	265.4	0.0	3.7	11.1	10.4	265.4	275.3	304.6	293.1
1966	271.3	0.0	4.6	14.4	9.3	256.4	268.2	305.1	280.4
1967	270.7	0.0	7.4	15.7	9.4	242.8	260.7	298.8	265.4
1968	276.6	0.0	6.6	21.5	9.4	233.2	248.5	298.7	255.0
1969	288.2	0.0	5.1	22.7	8.5	234.3	249.3	299.4	254.5
1970	310.7	0.0	6.7	21.7	8.3	239.9	255.9	307.9	260.0
1971	347.7	0.0	6.5	23.1	6.3	253.5	270.1	328.6	269.7
1972	391.8	0.0	3.2	23.7	6.0	275.0	283.8	348.9	290.2
1973	398.3	0.0	2.2	21.5	4.9	320.6	327.6	396.5	332.5
1974	407.0	0.0	2.1	19.1	4.5	279.2	285.1	338.4	288.1
1975	485.0	0.0	2.7	14.0	5.1	275.0	282.3	320.9	286.6

Source: Westphal and Kim (1977), Tables B.1 and B.2.

*At 1965 prices.

distinguish between the effective exchange rate in which the interest subsidy is as calculated above and the rate in which the interest component reflects only (changes in) the interest rate paid by exporters. However, only the first of these rates will be considered here. In turn, preferential direct tax treatment is a subsidy only insofar as there are profits to be taxed, so that the magnitude of the subsidy depends upon the profit rate per dollar of exports. All of this is to say that our net effective exchange rate, which includes exchange premia and direct cash subsidies as well as direct tax plus interest subsidies, is an imperfect index of export incentives as they affect profits from exporting, because the latter subsidy component may fluctuate without there having been any change in either the direct tax rate on income earned from exporting or the interest rates paid by exporters.

Only real effective exchange rates are shown in Table 2. These have been obtained from the corresponding nominal rates in the following manner. Assuming that the prices of a country's exports move in parallel with foreign price movements, multiplying a nominal effective exchange rate by an index of prices in overseas markets yields the number of won in current prices received per dollar of exports, the latter in constant prices.⁶ Then, deflating the figure so obtained by an index of domestic prices gives the number of won in constant prices received per dollar of exports also in constant prices; i.e. a purchasing power parity adjusted, or real, effective exchange rate for exports. Table 2 allows the gross and net rates to be compared with the rate including only those incentives which directly affect revenues, i.e. exchange premia and direct cash subsidies.

Exporters first obtained tariff exemptions on imported intermediate inputs in 1959; indirect tax exemptions, in 1962; and, tariff exemptions on imported capital goods, in 1966. Thus, for appraising trends in export incentives before 1966, as well as for comparisons of incentives before 1966 with those after 1966, the gross real effective exchange rate for exports is the only relevant indicator, since its value alone reflects the granting of exemptions. The net rate is the superior index for examining trends after 1966, since there have been no subsequent changes in the scope of exemptions. That is, after 1966, variations in the relative value of exemptions, which affect the gross but not the net rate, reflect only changes in tariff and indirect tax rates from which exports were already exempted, including the effect of shifts in the composition of exports.

There is unfortunately no information on the value of tariff exemptions between 1959 and 1961. Thus, using the net rate for these years and the gross rate for the remaining years, one may conclude only that the average level of the gross real effective exchange rate for exports was something in excess of 295.5 between 1958 and 1965. The average gross rate was 302.0 between 1966 and 1970. However, the rise in the overall inducement to export resulting from the incentive policies adopted over the first half of the 1960s was certainly greater than indicated by this comparison. In the first place, the gross real effective exchange rate for exports exhibits wider fluctuations before 1965 than for the following five years. Thus, its average value in 1962 and 1963, prior to the devaluation upon the return to a unified exchange rate, was only 270.1. In addition, our estimates neglect two incentive mechanisms that became important in the mid-1960s, namely wastage allowances and the export-import link system, though the latter was unimportant after about 1967. Because of the understatement noted earlier, they also fail to indicate adequately the increase in credit subsidies arising from the relaxation of credit ceilings for exporters that took place in the early and mid-1960s.

But most important, the comparison neglects the simultaneous reduction in incentives given to import competing production, including the gradual relaxation of import controls. For, it is of course not the level of export incentives *per se* that should concern us, but rather their level in relation to the incentives to produce for domestic sale. Table 2 also gives estimates of the real effective exchange rate for imports, the nominal value of which equals the official exchange rate plus average customs duties and tariff equivalents (e.g., premia paid to purchase foreign exchange certificates from exporters) paid per dollar of imports.⁷ Unfortunately, though, the effective exchange rate for imports is a virtually meaningless indicator of protection from imports due to its failure to reflect the effect of import controls. Excepting estimates for 1968 (discussed in the next section), there is no solid evidence concerning the impact of import controls, let alone how it has changed over time. But it is nonetheless apparent that import controls have been progressively liberalized since 1964.

Owing first to the sale of exporters' foreign exchange receipts in a free market, and then to devaluation in 1961, export incentives were by no means lacking in the late 1950s and early 1960s. In fact, it will be recalled that exports

began growing at a modestly rapid pace in 1957. While the growth of exports up to sometime around 1960 may be interpreted simply as a return to the situation prevailing before the Korean War, it is notable that this did not take place in the absence of incentives. Exports increased rapidly between 1960 and 1965, at an annual compound rate of 24% in real terms (see Table 1). But in the five years following 1965, the real growth of exports accelerated to 37% per annum.

Relative to its average over the preceding five or six years, the net real effective exchange rate for exports increased nearly 30% between 1970 and 1973, principally as a result of the appreciation of the Japanese yen. In turn, exports in 1973 were more than two and a half times their real value in 1970. In response to these and other, less transitory indications that export incentives were perhaps yielding excessive profits, the government abolished a number of incentive mechanisms starting in 1973. Thus the benefits of lower direct tax rates and automatic tariff exemptions on imported capital goods were withdrawn, while wastage allowances declined as did interest subsidies. Nonetheless, the net real effective exchange rate in 1974 and 1975 remained higher than its average over the latter half of the 1960s. Owing not to the change in incentives, but rather to the world recession, the value of real exports fell by 2.3% in 1974. In turn, real export growth was nearly 15% in 1975 and regained its rapid pace in 1976.⁸

The real effective exchange rates for exports shown in Table 2 are of course only very crude indicators. It would increase the precision of the estimates as indicators of profitability if the nominal exchange rate were multiplied by an index of export unit values or export prices abroad rather than by an index of the general price level abroad. Equally, the overall domestic wholesale price index should ideally be replaced by an index of wholesale prices weighted by export volumes (to gauge the profitability of exports relative to domestic sales) or by an index of export production costs. Likewise, the estimates would indicate the competitiveness of Korea's exports more precisely if indices of domestic and foreign production costs were used in place of price indices. Refinements by Balassa (1977, Chapter 8) of the estimates in the latter direction confirm that Korea's exports were slightly more competitive in 1974 and 1975 than in the late 1960s, while they had achieved an extremely high level of competitiveness between 1971 and 1973.

There clearly appears to be a relationship in

the Korean experience between export incentives and the growth of exports. Nonetheless, efforts to 'prove' the relationship statistically have not yielded notably robust results.⁹ However, based on regressions of real exports against the gross real effective exchange rate and real non-agricultural output, Frank, Kim and Westphal (1975, pp. 85-86) conclude that '... the responsiveness of [manufactured] exports changed sharply after 1963. ... Before 1963, sensitivity to [effective] exchange rate policy was lacking. ... This change appears to be due to two main factors: the government's intention to stabilize exporters' profits at relatively high rates was probably only clearly perceived in 1963 or shortly thereafter, while the general productive capacity of the economy did not begin expanding rapidly until after that year.

As to the overall effectiveness of Korean exchange rate and incentive policies, Frank, Kim and Westphal (1975, Chapters 8 and 9) develop and estimate a simultaneous equation model to demonstrate that the historical values of the official exchange rate, import tariffs and export incentives, taken together, resulted in nearly achieving the maximum potential GNP growth rate. Thus, assuming that incentives to exports and tariffs on imports had remained unchanged at their historical levels, the optimal official exchange rate was found to be about equal to the historical rate.

To conclude: The changes in export incentive policies that accompanied the adoption of an export-led industrialization strategy clearly increased the incentive to export. Furthermore, the new measures led to the gradual replacement of a complicated, largely *ad hoc* system of incentives based on multiple exchange rates and direct cash subsidies, and requiring frequent adjustments, with a simplified and more stable system. The export policy reforms may thus be credited with having laid the foundations for continued rapid export growth once a larger base had been established. They provided assurance of stable profits on exports.

In response, export growth accelerated for several years after 1965 and has continued to be quite rapid despite a continually expanding base. The growth of exports, in turn, has contributed to output growth, leading to a very substantial increase in the share of exports in GNP and that of manufactured exports in output. At the same time, sustaining this performance has required periodic devaluations¹⁰ and changes in export incentive rates (principally wastage allowances and credit

preferences) between devaluations in order to maintain the real effective exchange rate for exports at a relatively constant level in the face of more rapid inflation domestically than abroad.

EFFECTIVE RATES OF PROTECTION AND SUBSIDY IN 1968

A more detailed analysis of incentive policies may be obtained from an effective protection study, which makes possible a quantitative comparison of incentives granted to exports versus those granted to import-competing production. Such a study conducted for 1968 sheds valuable light on the impact of incentives under the policy regime adopted in the mid-1960s. Its principal results are summarized in this section.¹¹

As indicated previously, legal tariff rates have never been a good measure of the divergence between domestic and world market prices in Korea. First, many imports are exempt from duties, including intermediate goods imported for use to produce exports and capital goods imported for various uses. Second, tariffs are virtually prohibitive for a number of commodities with the result that domestic production is sufficient to satisfy local demand at or below the world market price plus tariff. In these two cases, the legal tariff overstates the nominal (i.e. actual) degree of protection. Third, many imports are subject to controls. The domestic price of such commodities can be higher than the world price plus tariff if demand at the tariff-inclusive price exceeds domestic production plus the permitted volume of imports.

For the study of incentives in 1968 it was thus necessary to compare domestic and world market prices directly. The divergence for a particular commodity is conventionally ex-

pressed in terms of the nominal rate of protection, which is the percentage excess of the domestic over the world market price, with the latter converted into its domestic currency equivalent at the prevailing exchange rate.^{12, 13} Average rates of legal and nominal protection are compared in Tables 4 and 5 below according to several classifications of sectors. (The basis for the classification used in Table 5 is explained further below.)

Korean legal tariff rates in 1968 were quite low by comparison with other developing countries.¹⁴ Furthermore, the protection potentially afforded by tariffs to domestic sales (i.e. of domestically-produced output) was generally realized only in very small measure. The average tariff rate across all commodities in 1968 was 54% whereas the average nominal protection rate was only 14%.¹⁵ There was thus a good deal of 'water' in Korean tariff rates, with this being most evident for industrial rather than for primary products.

In view of these results, it is tempting immediately to conclude that import controls added little to the protection provided by the tariff structure. However, it is necessary to analyse import restricted commodities separately to verify this conclusion, because legal tariff rates in 1968 were the sum of two elements: a regular rate that was legislated and a special rate that was administered and used to 'mop-up' the scarcity premiums resulting from import controls.

Final judgement on the importance of import controls thus rests on a comparison of nominal protection with regular tariff rates alone. Table 3 gives estimates which are weighted averages over all commodities for which nominal protection exceeded the regular tariff rate. The definitions chosen for assigning sectors to trade categories classify a sector as 'exporting' if more than 10% of its output is exported; as 'import competing' if more than

Table 3. *Protection due to import controls in 1968*

Trade category	Number of commodity groups	Nominal protection %	Regular tariff %
Export	5	64.9	56.5
Import Competing	22	41.5	18.0
Non-import Competing	46	66.2	26.9
XIC	4	98.6	38.7
All	77	62.6	26.6

Source: Westphal and Kim (1977), p. 2-19.

Note: Includes only those commodity groups for which nominal protection exceeded the regular tariff rate; see the discussion in the text.

Table 4. *Average incentive rates for major industry groups in 1968*

	Primary sectors		Total manufacturing	All industries	
	Agri.	Mining			
	%	%	%	%	
<i>On domestic sales</i>					
Legal protection	36.5	12.2	35.1	67.6	54.3
Nominal protection	17.0	8.9	16.5	12.2	14.0
<i>On total sales</i>					
Effective protection	18.1	2.9	17.1	-0.9	9.9
Effective subsidy	22.1	4.7	20.9	-6.5	10.0

Source: Westphal and Kim (1977), Tables 2.A and 2.B.

Note: Agriculture includes forestry and fishing; 'all' industries refers only to commodity producing sectors.

10% of domestic supply is imported; and, as 'non-import competing' if neither the export nor the import share exceed 10%. XIC (export and import competing) sectors comprise those in which both shares exceed 10%. The classification is based on export and import shares in 1968.

Except for commodity groups in the export category, import controls did afford some commodities significant additional protection. However, out of a total of 365 commodity groups included within the sample for the price comparison survey, there were only 77 for which nominal protection exceeded the regular tariff rate, and these 77 accounted for only 11% of total domestic sales within the sample. Thus, in total effect, import controls were relatively unimportant. This holds even though import controls were ostensibly imposed on competing imports in the markets for commodities representing 76% of all domestic sales in the sample.¹⁶

We now turn to estimates of effective protection and subsidy rates for 1968. These estimates are based on nominal protection rates, rather than tariff rates, and further incorporate the effects of all incentive policies operating in 1968, including the export incentives discussed in the previous section as well as subsidies granted to key import-substituting industries.¹⁷ Averages based on estimates made at the level of 150 commodity producing sectors are given in Tables 4 and 5. In turn, Annex Table 1 gives estimates averaged according to industrial classification.

Effective protection calculations express the impact of protection measures on value added per unit of production instead of the gross price.¹⁸ The effective protection rate of -0.9% for manufacturing output as a whole (see Table 4) thus indicates that protection measures on balance provided no protection to value added in the manufacturing sectors, the protection on outputs being slightly more than offset by the

Table 5. *Average incentive rates in manufacturing by trade category in 1968*

	Exporting sectors	Import competing sectors	Non-import competing sectors	XIC sectors	All manufacturing
	%	%	%	%	%
<i>On domestic sales</i>					
Legal protection	83.4	56.4	65.5	75.7	67.6
Nominal Protection	8.1	32.2	5.1	37.8	12.2
<i>Effective protection</i>					
Domestic sales	-18.0	93.1	-16.4	72.8	-1.4
Exports	4.6	-8.6	-0.8	-2.1	3.1
Total sales	-10.7	91.7	-16.1	45.2	-0.9
<i>Effective subsidy</i>					
Domestic sales	-26.2	91.4	-24.3	55.0	-8.9
Exports	13.5	35.3	6.1	8.7	12.4
Total sales	-13.4	90.7	-23.7	37.9	-6.5

Sources: Westphal and Kim (1977), Tables 3.A and 3.B.

Note: The basis for classifying individual sectors is the same as that employed in Table 3.

cost-raising effects of protection on inputs. It may further be seen that protection measures afforded an implicit subsidy to primary producers, particularly in the agricultural sectors. Both of these results -- no effective protection to manufacturing, and higher effective protection to primary producers -- are nearly unique to Korea, as most other developing countries protect industry at high levels and at the expense of primary production.

Effective subsidy calculations further include the impact of credit and direct tax preferences. These incentive mechanisms do not change unit value added in world prices, however they do affect the composition of value added as well as profits after taxes. These subsidies were incorporated in the following manner: the actual total direct tax liabilities of all firms were reapportioned to each sector on the basis of its share in the total tax base, i.e. it was assumed that each firm would have paid an identical average tax rate on its net income under a neutral tax policy. The difference between the reapportioned tax liability and a sector's actual tax liability is the estimated tax subsidy, which could thus be negative as well as positive depending upon whether the sector actually paid a higher or lower tax rate than the average. Interest subsidies were determined in an analogous fashion, assuming that under a neutral policy all sectors would have paid an identical average interest rate on outstanding loans, that rate being determined as the ratio of total interest payments by all sectors to total loans outstanding. Total direct tax and interest subsidies were then added to each sector's value added in domestic prices.¹⁹ The effective subsidy rate is the percentage by which this adjusted value added exceeds value added at world market prices. Since the sum of all direct tax and credit subsidies over all sectors is zero, the weighted (by value added at world market prices) average of all effective subsidy rates is equal to the weighted average of all effective protection rates.

Under the incentive system prevailing in Korea, preferential credit goes largely to the manufacturing sectors while the primary sectors benefit from lower direct tax rates. As may be seen in Table 4, the net result of credit and direct tax preferences in 1968 was implicitly to tax manufacturing further at the expense of primary activity. Adding these preferences reduces the effective incentive to manufacturing from -0.9 to -6.5% and increases that to primary production from 17 to 21%.²⁰ Thus the overall result that manufacturing receives no preferential inducement under Korea's in-

centive mechanisms is strengthened by adding the effects of direct tax and credit policy.

Of course, these results obscure differences in the incidence of incentives among particular industries and between exports and domestic sales. As we are here most interested in the manufacturing sectors, Table 5 presents estimates for these sectors averaged by trade category, with separate figures given for exports and domestic sales. Starting first with the results for all manufacturing, one finds that greater effective incentives were afforded to exports than to domestic sales. By virtue of being able to import their inputs duty free, exporters faced world market prices both for their outputs and for their tradeable inputs. The positive effective protection rate of 3.1% on export sales reflects the implicit subsidy to exports through generous wastage allowances and preferential rates on electricity and transportation. In turn, export sales benefited more than did sales on the domestic market from direct tax reductions and credit preferences, so that all the incentives together yielded an effective subsidy rate on exports of more than 12%. By contrast, the effective subsidy rate on domestic sales was -8.9%.²¹

As among manufacturing sectors classified by trade category, the sectors exhibiting the lowest average effective subsidy rates on total sales are the export and non-import competing sectors. These are also the sectors in which the effective subsidy on export sales on average exceeded that on domestic sales. These sectors together accounted for 84% of Korea's manufactured exports (at producers' prices) in 1968.²² The share of exports in the output of the export industries was 36%; that for the non-import competing industries was roughly 2%. In turn, effective subsidy rates were highest on average in the import-competing sectors, where domestic sales were highly protected. The share of exports in the output of these industries was less than 2%.

The results for the XIC sectors are somewhat puzzling on first glance. (Recall that for these sectors both the ratio of exports to output and the ratio of imports to domestic supply exceed 10%.) Though the effective subsidy rate on domestic sales was over six times that on exports for these sectors, the share of exports in their output was nearly 40%. Correspondingly, an examination of individual export (as distinct from XIC) industries reveals that total incentives to domestic sales were also higher than total incentives to exports in a number of these [Westphal and Kim (1977), Section 3.5]. There is strong, independent evidence of car-

telization among producers in most if not every one of these export and all of the XIC sectors, which together accounted for something less than 20% of Korea's manufactured exports in 1968. Nearly all of these sectors benefited from above average nominal protection on the domestic market. Cartels in these sectors thus appear to have operated in the classic mold of discrimination monopoly, covering their fixed costs through high prices in the domestic market and selling at or above marginal cost abroad.²³ This would explain the apparent inconsistency between high export shares and greater effective subsidy rates on domestic sales.

The measures of incentives presented to this point are gross estimates, in the sense that no adjustment has been made for the overvaluation

of the Korean won. Such an adjustment is, however, necessary as the actual exchange rate is affected by protective measures against imports and by export incentives. The adjustment required to obtain 'net' effective incentive rates is the replacement of the existing exchange rate with an estimate of the free trade exchange rate in the calculation of value added at world market prices. The free trade exchange rate is the rate that would have prevailed in the absence of all protection and incentive measures, except optimal tariffs. Net effective rates thus indicate the difference between value added at domestic prices under the observed policy regime and world market price value added at the free trade exchange rate.

Westphal and Kim (1977, Section 3.6) present a full set of estimates of net effective

Table 6. *Exports of goods and services*

	1960	1965	1970	1975
A. <i>In billion won at current prices</i>				
Exports of goods and non-factor services	8.2	68.6	381.2	2,730.3
(Gross) factor income from rest of world	1.9	8.3	47.1	99.2
B. <i>Percentage shares in exports of goods and non-factor services at current prices</i>	%	%	%	%
Merchandise	44.0	69.7	75.2	90.5
Primary products	38.0	27.3	17.0	16.7
Manufactured products	6.0	42.4	58.2	73.8
Services	56.0	30.3	24.8	9.5
C. <i>In million dollars at current prices</i>				
Foreign exchange receipts from current transactions	111.8	298.0	1,306.7	5,909.7
D. <i>Percentage shares in foreign exchange receipts from current transactions, at current prices</i>	%	%	%	%
Visible exports	29.0	57.8	62.4	83.2
Invisible exports	71.0	42.2	37.6	16.8
Receipts from government transactions*	56.3	25.3	20.0	2.7
Military procurement†	36.9	13.4	10.6	--
Won sales to UN military personnel	19.1	11.5	4.0	--

Source: A and B are based on national income accounting data found in Bank of Korea, *National Income in Korea* (1975), and *Economic Statistics Yearbook* (1976). C and D are based on foreign exchange settlements data found in various issues of Bank of Korea, *Economic Statistics Yearbook*.

* Includes non-military transactions as well as military procurement and won sales to UN military personnel.

† Includes US offshore procurement related to the Vietnam War; also includes sales of electricity, water, and transport and communication services to the UN military command.

Note: There are differences in statistical sources, coverage, and the times at which various transactions are recorded between the national income and foreign exchange settlements data; also, the former are in domestic currency values while the latter are in US dollar values. Thus, at the official exchange rate, merchandise exports do not exactly correspond in current prices to visible exports, nor does the sum of non-factor service exports plus factor income from abroad equal invisible exports.

incentive rates. Here we need only note their principal finding in regard to export incentives. Relative to the free trade exchange rate, the degree of overvaluation of the won in 1968 is estimated to have been roughly 9%. In turn, the average net effective subsidy rate on manufactured exports was virtually zero. Thus, value added on the given volume of exports was about the same as under a free trade regime, with excess wastage allowances plus credit and direct tax subsidies roughly compensating for the modest overvaluation of the won.

A CLOSER LOOK AT EXPORT PERFORMANCE

Korea's export performance has been remarkable not merely for the rapid growth of exports. Other dimensions touched on in the following include the diversification of exports, by composition and destination, and the possible importance of unique factors in explaining the rapid growth of Korea's exports.

Export composition

As shown in Table 6, more than half of Korea's foreign exchange receipts from current transactions in 1960 were earned on government transactions, of which military procurement was the single largest item. Military procurement consists largely of services, with construction being particularly important. Sales of won (for personal use) to resident UN military personnel are also classified under government transactions and make up the second largest item under this heading. Merchandise exports, which accounted for only 44% of total exports in 1960 were dominated by primary products.

By 1975, government transactions were the source of less than 3% of foreign exchange earnings. In turn, the share of merchandise in total exports had reached 91%, while that of manufactured products grew to 74%. Though foreign exchange earnings in current prices expanded more than 50 times over these 15 years, manufactured exports expanded over 900 times, a rate of growth averaging more than 55% per annum.²⁴ Admittedly, the growth of manufactured exports started from a very small base, but it continued at a rapid pace after manufactured exports had reached a substantial percentage of output. Thus more than 25% of the increase in manufactured output between 1970 and 1975 was due to export growth,

whereas the share of exports in manufacturing output in 1970 had been only 13%.²⁵

The increasing diversification of Korea's merchandise exports over time may be seen in Table 7, while the following discussion is based on somewhat more detailed statistics. The most important items in Korea's merchandise exports in 1960 were primary products, including (in order of their importance) metallic ores, rice, crude animal and vegetable materials, fish, and dried seaweed. Woven cotton fabrics constituted more than half of exported manufactures, which in turn accounted for less than 14% of total commodity exports. The share of manufactures reached slightly more than 50% by 1965. Clothing, plywood, woven cotton fabrics, and plates and sheets of iron and steel each accounted for more than 5% of commodity exports in that year. By 1970, clothing had grown to more than a quarter of Korea's exports of goods, plywood and textile fabrics were each more than 10%, and electronics were approaching 5%. In turn, the ability of Korean entrepreneurs to respond aggressively to world market trends is exemplified in the rapid rise of human hair and wig (consisting almost exclusively of the latter) exports from nil in 1960 to about 12% of commodity exports in 1970. These exports later declined in value, falling to 1.5% of exports in 1975, as the spotlight of fashion turned away from wigs and false eyelashes.

Korea's exports in 1975 were well diversified in comparison with those of other developing economies. Exports exceeded one hundred million US dollars for each of the following items in that year (listed order of importance): woven textile fabrics (of which cotton fabrics were less than 10%), electrical machinery and appliances (including electronics), miscellaneous manufactures, fish, plates and sheets of iron and steel, veneer sheets and plywood, footwear, transport equipment (largely shipbuilding, plus rolling stock), clothing, manufactures of metal, and non-metallic mineral manufactures. Together, exports of primary products included in SITC categories 0 through 3, which had represented more than 80% of commodity exports in 1960, accounted for only 18% of total exports. Nonetheless, the value of these exports increased from less than \$30 million in 1960 to \$925 million in 1975.

As is shown in Table 8, the destination of Korea's exports also broadened as manufactured exports grew. Japan's share fell from nearly two-thirds in 1960 to a little less than one-fourth in 1975, while the share of the United States rose from nearly 7% in 1960 to

Table 7. *The composition of merchandise exports*

	1960		1965		1970		1975	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Food and live animals (0)	9.7	29.6	28.2	16.1	65.6	7.9	602.3	11.9
Beverages and tobacco (1)	0.5	1.5	0.9	0.5	14.2	1.7	67.6	1.3
Inedible crude materials (2)	15.8	48.2	37.0	21.1	100.0	12.0	150.5	3.0
Mineral fuels (3)	1.1	3.3	1.9	1.1	8.7	1.0	104.5	2.1
Animal and vegetable oils and fats (4)	0.2	0.6	0.1	0.1	0.1	0.0+	0.9	0.0+
Chemicals (5)	0.4	1.2	0.4	0.2	11.4	1.4	74.8	1.5
Manufactured goods by material (6)	3.9	11.9	66.4	37.9	220.9	26.4	1,484.6	29.2
Wood and cork products (63)	—	—	18.2	10.4	93.5	11.2	227.6	4.5
Textiles (65)	—	—	10.5	6.0	84.9	10.2	648.9	12.8
Non-metallic mineral manufactures (66)	—	—	2.8	1.6	6.5	0.8	106.8	2.1
Iron and steel (67)	—	—	12.7	7.3	13.4	1.6	231.5	4.6
Manufactures of metal (69)	—	—	2.2	1.3	12.2	1.5	124.1	2.4
Machinery and transport equipment (7)	0.1	0.3	5.5	3.1	61.5	7.4	702.1	13.8
Electrical machinery and appliances (72)	—	—	1.9	1.1	43.9	5.3	441.6	8.7
Transport equipment (73)	—	—	1.1	0.6	9.2	1.1	183.7	3.6
Miscellaneous manufactured articles (8)	0.1	0.3	34.5	19.7	352.5	42.2	1,882.6	37.1
Clothing (84)	—	—	20.7	11.8	213.6	25.6	1,148.2	22.6
Footwear (85)	—	—	4.1	2.3	17.3	2.1	191.2	3.8
Miscellaneous (89)	—	—	8.9	5.1	114.1	13.7	383.6	7.5
Human hair and wigs (89995)	—	—	6.8	3.9	101.1	12.1	75.3	1.5
Unclassified (9)	1.0	3.0	0.2	0.1	0.4	0.0+	11.1	0.2
TOTAL	32.8	100.0	175.1	100.0	835.2	100.0	5,081.0	100.0

Source: Bank of Korea, *Economic Statistics Yearbook*, various issues.

Note: The figures shown here are based on customs clearance data and thus exclude exports not cleared through customs, such as sales of goods to military forces overseas and offshore sales of fish.

Values are in millions of current US dollars. Totals may not reconcile due to round-off error. Numbers in parentheses are SITC codes.

Table 8. *Destination of merchandise exports*

	1960		1965		1970		1975	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
United States	2.2	6.7	61.6	35.2	395.0	47.3	1,536.3	30.2
Japan	20.8	63.4	43.9	25.1	233.9	28.0	1,292.9	25.4
Europe	4.6	14.1	21.4	12.2	76.0	9.1	936.7	18.4
Other Asia	3.8	11.6	41.8	23.9	81.8	9.8	760.0	14.9
Rest of World	1.4	4.3	6.3	3.6	47.6	5.7	555.2	10.9
TOTAL	32.8	100.0	175.1	100.0	835.2	100.0	5,081.0	100.0

Source: Bank of Korea, *Economic Statistics Yearbook*, various issues.

Notes: See notes to Table 7.

almost 50% in 1970 before falling to roughly 30% in 1975. In turn, Korea's exports to Europe and the rest of the world increased more than proportionately, with those to the Middle East rising particularly fast after 1973.

Unique factors possibly explaining export growth

It is appropriate here to confront the common tendency among those unfamiliar with its details to ascribe Korea's success as an exporter to its special relationship with the United States and Japan. First, the data in Table 8 show that the share of Korea's merchandise exports to countries other than United States and Japan increased from 30 to 44% between 1960 and 1975. This observation is not consistent with such an explanation.

Korea's relationship with the United States obviously increased its foreign exchange earnings through expenditures stemming from the stationing of UN forces in Korea and, during the war in Vietnam, from offshore procurement by the United States. As indicated in Table 6 under 'receipts from government transactions', militarily related expenditures (the sum of the two components shown) in the past accounted for a sizable fraction of Korea's foreign exchange earnings. However, the share of these expenditures in total earnings has fallen steadily over time, and was less than 3% by 1975. Thus, only a small fraction of the growth in total export earnings between 1960 and 1975 was contributed by militarily related expenditures.²⁶ Furthermore, the merchandise component of these expenditures has always been well below one-half of the total.

With but one exception, neither the United States nor Japan have granted Korean exporters visible, special preferences unavailable to other developing countries' exporters. The exception, alluded to above, occurred during the Vietnam War, when Korean exporters were granted eligibility as suppliers under US offshore mili-

tary procurement. Since exports under this scheme are included within the militarily related expenditures just discussed, we need not consider them further. In turn, Korean exporters may have benefited from more subtle forms of preferential treatment, for example in the allocation of import quotas on textiles by the United States. It is not known whether this is so. In any event Korea's rapid diversification away from textile exports reduces the relevance of this possibility in explaining the growth of its exports.

It has also been suggested that Korea's exports have benefited from commercial relationships (e.g., direct foreign investment, subcontracting) fostered by its close ties to the United States and Japan. The most solid evidence concerning this possibility is in regard to direct foreign investment.²⁷ While Korea has relied extensively on foreign savings to finance investment, most of the private capital inflow has been in the form of commercial loans.²⁸ Between 1966 and 1971, direct foreign investment averaged less than 4% of total foreign capital inflows. *Cumulative* direct foreign investment in Korea prior to 1970 was appreciably less than \$100 million in current prices. Assuming that all of this investment went into the manufacturing sector and combining this figure with the capital stock data given in Table 15 below indicates that no more than 5% of the capital stock in manufacturing in 1970 was financed by direct foreign investment. In turn, Cohen (1973) estimates that 'foreign' firms (i.e. those with *any* foreign equity participation) were responsible for only a small fraction of Korea's exports: 11% in 1970 and 14% in 1971.

The situation has changed somewhat since 1971, for the share of direct foreign investment in total foreign capital inflows rose to an average of nearly 20% in the following four years. This was largely due to Japanese investment permitted by the relaxation of the Japanese government's control over foreign

capital outflows and stimulated by rising wages and environmental controls at home. The cumulative direct foreign capital inflow from 1970 to 1975 totals in the neighborhood of \$700 million, or roughly 17% of total manufacturing investment over this period. I have been unable to obtain estimates of the share of foreign firms in Korea's total exports for more recent years.²⁹

It was not until 1970 that Korea established its first free trade zone explicitly designed to attract direct foreign participation in exports. Up to mid-1973, total exports from firms located in this zone cumulated to only \$20 million [in 1973 dollars, from Choe (1975)]. More than two-thirds of these exports came from electrical machinery and appliance producers, most of whom were involved in off-shore electronics assembly. In fact, foreign firms have dominated Korea's electronics exports from the start. In 1972, for example, wholly-owned foreign subsidiaries accounted for 34% of total electronics production in Korea and 54% of the industry's exports; the respective figures for joint ventures were 20 and 18% [S. C. Suh (1975)]. With foreign firms accounting for roughly 15% of Korea's total manufacturing exports, however, electronics represents an atypical case.³⁰

There has been very little research into the marketing channels employed or the entrepreneurial activity involved in developing Korea's exports. Thus, for example, one cannot say what proportion of Korea's exports has taken place through international subcontracting arrangements not linked to direct foreign investment. Nor can one do more than speculate whether Koreans derived unique benefits from their extensive contact with foreigners during and after the Korean War. In some cases this seems likely. For example, an explanation of the current success of Korean construction firms in being awarded major construction contracts in the Middle East would be incomplete without reference to the learning-by-doing gained through earlier contracts under military procurement in both Korea and Vietnam. But such factors should not detract from what is evident to anyone who has come into contact with Korean exporters, that they are both aggressive and successful in seeking and exploiting opportunities for profitable export. In this respect, one certainly cannot explain Korea's success as an exporter of manufactures without reference to the efforts of its entrepreneurs or the incentive policies under which they operate.

THE ROLE OF TRADE EXPANSION IN INDUSTRIAL DEVELOPMENT

We at last turn to examine at a broad level how the growth of exports has contributed to industrialization. It is first instructive to compare Korean experience with that of other developing countries. The typically low share of exports in Korea's GNP observed in the 1950s suggests that the growth of exports can be interpreted simply in terms of catching-up to the international 'norm'. If true, this would make the Korean case somewhat less interesting, as it could not be claimed to typify an export-led industrialization strategy.

What is needed is a comparison of Korea's economic structure with that of other countries of similar size and level of overall development. It is not very useful to do this directly, however, for there are very few countries in the world that are similar to Korea in these respects. A more useful, albeit indirect, comparison can be made using the results of cross-country regression analysis aimed at determining the average, or 'norm', economic structure at different levels of development and according to country size. The cross-country regressions used are from Chenery and Syrquin (1975).

Table 9 compares structural norms applicable to Korea for 1955 and 1972 with the historically observed structural shares. (1972 is used rather than a later year to avoid the possible distorting effects of the world boom in 1973 and the subsequent world recession.) Two sets of norm estimates are given: the first uses Korean values of *per capita* income, population, and the ratio of the current account balance-of-payments deficit to total domestic resources to calculate the norms from cross-country regressions in which these variables appear as explanatory factors; the second also uses Korean values of *per capita* income and population but arbitrarily assumes that the capital inflow ratio is zero. Differences between these sets of norms reflect the effects of foreign capital inflows at the unusually high rates observed in Korea.

In 1955, the share of industry (manufacturing plus construction) in GNP was somewhat below that which would be expected while the share of exports was very far below the average for a country of Korea's size and *per capita* income. By 1972, unusually rapid industrialization had reversed the pattern: industry's share was somewhat above the norm while the share of exports was nearly twice the norm when

Table 9. *Observed and norm industrial structure*

<i>Observed structural shares in Korea</i>		1955	1972
<i>Per capita</i> GNP (1965 prices)		\$79	\$179
Capital inflow ratio		7.7%	4.9%
Share of investment in GDP		12.0	20.8
Share of exports in GDP		1.7	21.0
Share of mfg. exports in GDP		0.4	17.8
Imports as percent of GDP		10.0	26.1
Primary share of GDP		48.0	32.0
Industry share of GDP		13.0	26.0
Utilities share of GDP		3.5	7.5
Services share of GDP		35.5	34.5
<i>Norm structural shares</i>		<i>Actual capital inflow</i>	<i>Zero capital inflow</i>
<i>Per capita</i> income		\$79	\$179
Share of investment in GDP		14.4	20.2
Share of exports in GDP		9.8	10.8
Share of mfg. exports in GDP		1.4	2.9
Imports as percent of GDP		17.6	15.8
Primary share of GDP		52.8	33.5
Industry share of GDP		14.4	24.9
Utilities share of GDP		5.2	7.1
			5.6
			7.4

Source: Westphal and Kim (1977), Table J. The norms are those estimated from the Chenery-Syrquin large country sample.

adjusted for the inflow of foreign capital. From the figures shown in Table 9, it may be concluded that: (1) the share of primary production has probably been atypically low over the past 20 years; (2) the pace of industrialization has been faster than in many other countries; (3) the growth of manufacturing exports has been unusually rapid and reflects more than simply catching up to the norm after the dislocations caused by Japanese colonial policy and two wars. It is also interesting to observe that the growth of investment was abnormally great and too quick to be attributed merely to high foreign capital inflows.³¹

Sources of growth

While it is apparent from the comparisons above that Korea's industrial development has clearly been export-led, this stands out even more dramatically when the sources of Korea's industrialization are compared with international norms. Using input-output data, it is possible to measure the contributions of domestic demand expansion, export expansion, and import substitution to industrialization. Roughly speaking, the measure used here decomposes the increase of industry's share in

GNP into these three sources, where import substitution is defined in terms of the changing share, for each industrial sub-sector, of imports in total supply.³²

The sources of Korea's industrialization from 1960 to 1968 are compared in Table 10 with crudely estimated cross-country norms for the growth of *per capita* income from \$100 to \$200. (The estimates for Korea have unfortunately not been carried beyond 1968.) While import substitution contributed very little to Korea's industrialization, the growth of exports contributed more than twice the relative amount that is typically associated with the doubling of *per capita* income from \$100 to \$200. What makes this comparison all the more striking is that during this period Korea's *per capita* income increased by only 55% in contrast to the 100% increase underlying the norm estimates.

One may also use input-output data to calculate the contribution of each source, sector by sector, to changes in output quantities, rather than to changes in sectoral shares in GNP as above. Seven input-output tables spanning the period from 1955 to 1973 at roughly three-year intervals are available for Korea. But to insure that the analysis is meaningful, it is necessary to convert data for different years to constant (domestic or world)

Table 10. *Sources of industrialization*

	Domestic demand expansion	Export expansion	Import substitution
	%	%	%
Korea (1960-68)	60	38	2
Large Country Norm	55	24	21
All Country Norm	50	18	32

Source: Frank, Kim, and Westphal (1975), p. 95.

prices. This has so far been done only for the tables covering 1955 to 1968, so that the analysis which follows is necessarily restricted to this period. In turn, data are not available at the same level of detail for 1955, so that parts of the analysis cover only 1960 to 1968.

The top half of Table 11 shows the sources of the growth of aggregate output decomposed to indicate separately the relative contributions of the primary, manufacturing, social overhead and service sectors. Between 1955 and 1968, the growth of the manufacturing sectors was responsible for more than half of the growth of aggregate gross output. In turn, the growth of manufactured exports directly accounted for 16% (8.4 divided by 53.2 expressed as a percent) of the increase in manufactured output. The estimates shown under the total

column for each source include the indirect contribution due to induced changes in intermediate demand.³³ Thus the expansion of exports, not just in manufacturing but throughout the economy, contributed 24% (12.9 divided by 53.2) to the growth of manufactured output, which means that there were strong backward linkages from exports; in contrast, import substitution, by which is meant a fall in the share of imports in total domestic supply, accounted directly for little more than 2% of the growth of manufacturing. Its total contribution was even less, indicating that import substitution generated indirect demands on sectors having higher than average requirements for imported intermediate imports.

Table 11. *Direct and total growth contributions: 1955-68*

	Domestic demand expansion		Export expansion		Import substitution		Total
	Direct	Total	Direct	Total	Direct	Total	
<i>1955-1968: All Goods & Services*</i>							
Primary sectors	18.8%	16.3%	0.7%	3.3%	-2.3%	-2.4%	17.2%
Manufacturing†	42.6	38.5	8.4	12.9	2.2	1.8	53.2
Social overhead	14.4	13.8	1.4	1.9	-0.0	0.1	15.8
Services	13.2	11.9	0.7	2.0	-0.2	-0.2	13.7
All sectors	89.0	80.5	11.2	20.2	-0.3	-0.6	100.0
<i>1960-1968: Manufactured Goods**</i>							
Exporting sectors	10.2	8.7	11.5	13.0	0.5	0.5	22.2
Import competing sectors	23.6	22.4	0.3	2.4	-1.8	-2.7	22.1
Non-import competing sectors	44.1	39.7	1.1	6.0	6.2	5.7	51.4
XIC sectors	3.9	3.2	2.1	2.8	-1.7	-1.7	4.3
All manufactures	81.7	74.0	15.1	24.3	3.2	1.7	100.0

Source: Westphal and Kim (1977), Table N.

* Based on data at constant domestic prices.

† Includes 'other'.

**Based on data at constant world prices.

Note: Figures may not reconcile due to round-off error. Growth contributions between 1955 and 1960 (1960 and 1968) were first calculated at the 29 (117) sector level and then aggregated before converting to percentages.

A comparison of the relative importance of export expansion and import substitution within sub-periods between 1955 and 1968 clearly demonstrates the marked change in strategy that occurred during the first half of the 1960s, as may be seen below:

Direct contributions to growth of manufactured output

	1955-60	1960-63	1963-68
Export expansion	5.1%	6.2%	17.4%
Import substitution	24.2%	0.9%	33.7%

Total contributions to growth of aggregate output

	1955-60	1960-63	1963-68
Export expansion	12.9%	6.3%	25.1%
Import substitution	10.2%	-6.9%	-0.8%

Import substitution in manufacturing and primary export growth characterize the period prior to the policy reforms, which began in 1960. By contrast, export expansion became the dominant trade-related source of industrial growth after the adoption of an outward-looking set of policies. Thus, between 1963 and 1968, export growth directly contributed 17% to the growth of manufacturing, it was directly and indirectly responsible for roughly one-quarter of the expansion of aggregate output.

In the bottom half of Table 11, the growth of manufactured output is decomposed according to the classification of sectors by trade category employed in Tables 3 and 5 above. Unfortunately, the data required for this do not extend back to 1955. More than half the growth of output in the exporting sectors was due to export expansion, while these sectors were the source of more than 75% of the growth of manufactured exports and 20% of the growth of manufacturing. Nonetheless, the expansion of domestic demand played a major part, as may be seen either by its contribution to the growth of all manufacturing output, which is nearly 75%, or by the total magnitude of the contribution of the non-import competing sectors, in which exports were less than 10% of output in 1968. Only among the sectors that had achieved non-import competing status by 1968 was import substitution the source of more than 10% of output growth.

Hidden in the aggregate figures given in Table 11 is the important role played by import substitution in some sectors, which was offset in the aggregate by *negative* import substitution (i.e. a rising ratio of imports to domestic supply) in other sectors. This may be seen from the somewhat more disaggregated figures given

in Annex Table 2, which presents various indices relevant to gauging the structural change that has occurred within Korea's manufacturing sector.

At an even more disaggregated level, between 1960 and 1968, import substitution contributed more than 20% to the growth of 12 out of the 80 manufacturing sectors distinguished in the analysis from which these estimates are drawn.³⁴ Among these were sectors producing fertilizers, petroleum products, sewing machines, electrical equipment and products, drugs, steel ingots, paper and paperboard, basic inorganic chemicals, and cast and forged steel (listed in order of the relative contribution of import substitution). But, over the eight-year period import shares actually increased, leading to *negative* import substitution, in 39 of the manufacturing sectors (and eight out of 12 primary sectors). In turn, export expansion was the source of more than 20% of output growth for 20 manufacturing sectors. Included among these were sectors producing various textile products at different levels of fabrication, miscellaneous manufactured products, lumber and plywood, apparel and accessories, electronics and electrical equipment. At the same time, the contribution of domestic demand expansion exceeded 80% in 53 out of the 80 manufacturing sectors. Thus the importance of domestic demand growth observed in the aggregate carries over to the individual sectors as well.

The pattern of manufacturing growth from 1960 to 1968 is clearly one of widespread export expansion, concentrated in the labour-intensive sectors, coupled with selective import substitution, primarily in sectors producing basic intermediate products. A more recent study, S. T. Suh (1975), analyses direct growth contributions through 1973. The results of this study are unfortunately not comparable with the estimates presented above for the period through 1968, partly because a different sector classification and level of aggregation are used, but more importantly because the estimates are all based on data in current prices. They none the less document the continuation of the same pattern: widespread export expansion and selective import substitution. Suh's results equally indicate an increase since 1968 in the relative importance of the heavy industrial sectors in the growth of manufacturing, both with respect to the domestic market and exports.³⁵ This is brought out in Table 12.

The sectors experiencing relatively substantial import substitution between 1968 and

Table 12. *Direct growth contributions: 1960-73*

	Domestic demand expansion	Export expansion	Import substitution	Total
	%	%	%	%
<i>1960-68</i>				
Light industry	56.9	10.8	-1.0	66.7
Heavy industry	25.8	1.2	6.3	33.3
Total industry	82.7	12.0	5.3	100.0
<i>1968-73</i>				
Light industry	40.1	21.8	-0.8	61.1
Heavy industry	30.3	9.1	-0.6	38.9
Total industry	70.4	30.9	-1.4	100.0
<i>1960-73</i>				
Total industry	73.1	26.8	0.1	100.0

Source: S. T. Suh (1975), Table 5.5.

Note: Based on data at current prices. Totals may not reconcile due to round-off error.

1973 included fibre spinning and textile fabrics, rubber products, chemicals, iron and steel, finished metal products, and non-electrical machinery. With the exception of the last two industries, import substitution was concentrated in the production of intermediate goods, and took place largely between 1968 and 1970. Much of this import substitution was due to the production of basic steel products and petrochemical derivatives in medium-scale plants. Among the sectors classified as heavy industry, those contributing most to the expansion of exports over 1968 to 1973 were chemicals, steel products, finished metal products, and electrical machinery and appliances.

The figures presented above amply demonstrate that the growth of exports has played a dominant role in Korea's development accounting for roughly 20% of the growth of aggregate output between 1955 and 1968 when backward linkage effects through the demand for intermediate inputs are included (Suh does not present estimates of total contributions). Moreover, these estimates understate the full contribution of export growth, since the only indirect contribution included is that due to the derived demand for domestically-produced intermediate inputs. (For the same reason, the estimates understate the full contribution of import substitution.) Two additional macro-economic indirect effects may be distinguished: a multiplier effect due to expenditure out of the additional income generated by the rise in production; and, a foreign exchange effect due to increased production made possible by a rise in foreign exchange receipts. These effects are most dramatic where factors of production would have otherwise been unemployed, but

they also operate by increasing allocative efficiency whenever the domestic resource cost, at shadow prices, of exports is less than the shadow-priced value of foreign exchange receipts. Note that either current or future consumption may be increased as a result, the latter through increasing the rate of investment.

Import substitution and export backward linkages

The role of import substitution in Korea's industrial development deserves further comment. A useful starting point is the apparent anomaly in the relationship between the shares of manufactured exports and industrial output in GDP. Returning to Table 9, one finds that Korea's share of manufactured exports in GDP in 1972 exceeded the norm by a far greater spread than did the share of industry in GDP; the difference is about 15 percentage points in the first case and only two or three percentage points in the second. This is largely explained by the absence of large-scale import substitution, which in turn is related to the pattern of realized backward linkages from exports to the domestic production of intermediate inputs.

The share of domestic value added (direct and indirect) in Korea's manufactured exports has been roughly 50% over most of the past decade.³⁶ This is not a consequence of the export incentive system, for the system does not discriminate between the use of imported and domestically-produced intermediate inputs (of the same quality) in the production of exports, except in so far as wastage allowances

on imported inputs provide a bias in favour of the latter.³⁷ With protection in the domestic market and currency overvaluation, it is of course true that unrestricted access to and tariff exemptions on imported inputs lead to a bias in favour of using them unless somehow offset. However, protection and currency overvaluation are both low in Korea. Additionally, the government has used the device of the 'domestic L/C', which gives the full range of export incentives to producers of intermediate goods supplied to exporters, to negate the remaining bias. Suppliers of exporters are thus permitted access to intermediate inputs at world market prices, the same as exporters.³⁸ By avoiding excessive subsidies to backward integration from exports, this system appears to have induced only those backward linkages that permitted efficient production.³⁹

The high import content of Korea's exports stems in the first instance from the types of products being exported. There are a few manufactured exports, including silk textiles, cement and ceramics, for which Korea does have the requisite natural resource base. Most others, such as cotton and wool textile products, plywood and steel products, require raw materials - cotton, wool, roundwood, iron ore, anthracite coal - local supplies of which are either insufficient or prohibitively expensive. In several of these cases, import substitution for intermediate inputs has been carried back to the stage where only the unprocessed natural resource product is imported. Thus, for example, natural-fibre yarns are produced domestically, as is steel. However, many exports, such as petrochemical based products (until recently) or electronic assembly (even now), require intermediate inputs for which the Korean market has been too small for efficient scale production or for which sophisticated and costly technological know-how is needed. Overall, for most export products, but subject to its natural resource endowment, Korea has exported the output of the labour-intensive processing stages. However, as noted above, there has also been a considerable degree of backward integration in a number of product lines, with import substitution for intermediate products having been, by and large, carried back as far as economical given Korea's poor natural resource endowment.

Taken together, the large contribution made by export growth to Korea's industrialization and the highly selective exploitation of backward linkages from exports help explain why import substitution has played such a subordinate part. While some backward linkages

from exports have been exploited through import substitution, the rapid change in the composition of exports has offset the import substitution that has occurred, with the result that the share of domestic value added in aggregate exports has remained roughly constant.

Government policy with respect to imports of consumer durables and other 'luxury' consumption goods has also been a contributing factor to the minuscule contribution of import substitution to overall growth. Imports of such goods - notable examples being automobiles, refrigerators, television sets, and the like - have been for the most part prohibited, so that nearly all of the latent domestic demand for these goods has been satisfied only after the start of domestic production. Thus, the government has managed to delay their purchase in significant quantities until they are produced locally, which gives rise to a pattern to which the term 'import substitution' does not, strictly speaking, apply. The mathematics of calculating growth contributions implicitly recognizes this distinction by assigning a very low weight to these sectors in the aggregate import substitution estimates as a result of their initially small share in domestic demand.

The rapid growth of foreign exchange receipts from exports has also been a key factor that has allowed import substitution to be selective, which in turn is reflected in its relatively small contribution to aggregate growth. Not to be overlooked is the fact that the pursuit of an economy's comparative advantage is a matter not only of the composition of exports and imports but also of their size relative to domestic production and consumption. The shares of both exports and imports in GDP were abnormally low at the end of the Korean War, and to pursue its comparative advantage has required that Korea increase the shares of both to atypically high levels. Import substitution is naturally small in the aggregate when the share of imports is rising. Moreover, selective import substitution has permitted scarce investment resources to be concentrated in one or a few sectors at a time and thereby enabled greater exploitation of economies of scale and of the linkages among closely inter-related activities.⁴⁰ Thus, certainly in most areas, import substitution has been delayed until demand was sufficient to support efficient scale plants. This is not to deny, however, that import substitution in other areas, most notably petrochemicals and automobiles, was probably premature, as it certainly appears to have been if learning-by-doing and other 'ex-

ternal economy' phenomena are neglected.

Comparative advantage

Simply to demonstrate that exports contributed substantially to Korea's industrialization does not establish that its strategy has been efficient in terms of factor use. Though the immediately foregoing discussion suggests that this conclusion would be generally valid, it is obviously desirable to seek further evidence. The issue of paramount concern is how Korea's industrial strategy has affected the growth of GNP and the attainment of other development objectives in comparison to alternative strategies that might have been pursued. But to examine it fully would require conducting counter-factual experiments using a sophisticated general equilibrium model that has been validated against the observed history, something which has not yet been attempted for Korea. Furthermore, there are undoubtedly additional indirect effects from exporting that would be hard to capture in such a model -- for example, the exploitation of economies of scale through increased market size and the motivation that competition in foreign markets provides for technological change.

Additional research would be required to gauge whether Korea has benefited in the latter directions as a result of following an export-led strategy. On the other hand, though it is

presumptive rather than conclusive, there is ample evidence to indicate that emphasis on exports has resulted in a generally efficient allocation of resources. This is discussed below in terms of, first, the factor intensity of Korea's exports and imports, and then, the increase in its factor utilization over time.

The determinants of comparative advantage are many and complex. They include the effects of natural resource endowment, labour and management skills, and their accumulation through learning-by-doing, risk and uncertainty, and a host of other factors which are either difficult to quantify or have not been quantified with sufficient precision in Korea's case. None the less, to the degree that Korea's comparative advantage during the 1960s may be said to have been in labour-intensive as opposed to capital-intensive activities, a partial assessment is possible. This assessment is based on a simple two-factor model of static comparative advantage, which is insufficient to illuminate the full range of issues bearing on a country's comparative advantage. Thus, merely finding that Korea exported labour-intensive commodities and imported capital-intensive ones does not 'prove' that resource allocation was generally efficient, but it does place the burden of proof on those who would argue otherwise.

Table 13 gives average labour-capital ratios for exports and for the replacement of imports by domestic production. These ratios are

Table 13. *The factor intensity of trade*

	Labour-capital ratios (Man-years per million won)			
	1960	1963	1966	1968
<i>Direct factor requirements</i>				
Manufactured products				
Domestic output	2.97	2.89	2.67	2.64
Exports	2.72	3.02	3.24	3.55
Imports	2.09	1.93	1.98	2.33
All goods and services				
Domestic output	4.39	4.59	4.46	4.12
Exports	3.25	2.52	2.41	2.10
Imports	4.53	4.87	4.05	4.29
<i>Total factor requirements</i>				
Manufactured products				
Domestic output	5.43	5.41	5.03	5.14
Exports	3.74	3.71	4.09	4.29
Imports	2.77	2.40	2.40	2.74
All goods and services				
Domestic output	4.39	4.59	4.46	4.12
Exports	3.42	3.05	3.25	3.15
Imports	3.78	3.66	3.26	3.48

Source: Westphal and Kim (1977), Table P.

weighted averages, in which the weights are proportional to each sector's share in exports and imports respectively. For comparative purposes, the weighted average factor intensity of domestic output is also shown in the table. Furthermore, since these estimates are based on input-output statistics, both direct and total factor intensity measures can be presented. However, for technical reasons having to do with the estimation procedure as well as for substantive reasons, the direct factor estimates are both the most reliable as well as the most relevant, the latter owing to the fact that many important intermediate inputs are tradeable.⁴¹

On examining these estimates, one finds that manufactured exports were substantially more labour-intensive than imports of manufactures in every year. On the other hand, total exports were more capital-intensive than the bundle of total imports. The contrast between the manufacturing and other sectors is to be explained by the complementarity of capital and natural resources, where the latter are excluded as a factor of production in the analysis. The effect of Korea's natural resource endowment on its composition of trade in primary products has led it to export relatively capital-intensive minerals and to import highly labour-intensive agricultural products.

The labour-capital ratios, by sector, on which these estimates are based are those for a single year - 1968. Thus, changes over time in the estimated factor intensity of a particular aggregate are due solely to changes in its composition. Comparing direct factor intensity estimates across years, one may conclude that Korea's manufactured exports became increasingly more labour-intensive over time while its manufactured imports tended to become more capital-intensive. In fact, whereas Korea's manufactured exports were less labour-intensive than average manufacturing in 1960, they were more labour-intensive by 1968. Manufactured imports were more capital-intensive than average manufacturing throughout the period.

At least between 1960 and 1968, the shifts over time in the composition of manufactured exports, and imports, when translated into changes in direct labour capital ratios, thus suggest that Korea was following its comparative advantage within the manufacturing sector, where unskilled labour was abundant and capital scarce. However, largely because of the growth of agricultural imports, it cannot be said that total exports were becoming more labour-intensive relative to total imports. These conclusions hold almost equally when one

examines the total factor intensity estimates. They do not imply, however, that resources were being allocated inefficiently within the primary sector, for one must also consider Korea's natural resource endowment. The relative abundance of some minerals led to the export of these, and it was probably efficient to import foodgrains given Korea's poor climate and land.

Another study, Hong (1976), investigates the factor intensity of trade up to 1973. Once allowance is made for differences in estimation methods and in the presentation of results, Hong's estimates for manufactured products over the period 1960 to 1968 are consistent with those given above. However, his investigation indicates an appreciable increase in the capital-intensity of manufactured exports since 1968, both in absolute terms and relative to factor proportions in manufacturing as a whole, and equally with respect to the direct and total factor intensity measures. In part, this is due to capital deepening in the manufacturing sector and the rapid increase in labour productivity, as Hong documents by using capital labour ratios by sector, specific to each year. Particularly after 1970, this trend may also be traced to increased exports of cement, steel, fertilizer and textiles and various items based on petrochemical derivatives. Either directly or indirectly, all of these products require capital-intensive production methods in plants subject to severe economies of scale. In the latter connection, given an arbitrarily imposed constraint to meet the domestic demand for these commodities through domestic production, temporary exports can be efficient as it permits the construction of large plants without leading to initial excess capacity and thereby reduces the cost of realizing greater economies of scale. Even without such a constraint, exports of cement, steel and fertilizer during the first half of the 1970s may well have been in Korea's dynamic comparative advantage. It is not so obvious that it was in Korea's comparative advantage to establish the production of petrochemicals to supply its textiles and plastics industries.

Trends in factor utilization

Among the outstanding features of Korea's overall development performance is the increase that has taken place in the rate of factor utilization. As noted at the outset of this essay, Korea has been relatively successful in finding employment for its labour force, which has grown at an average rate of 3.2% per annum

since 1960. This is broadly indicated by the fall in the unemployment rate from a peak of 8.3% in 1962 to a level of 4.1% in 1975. It is very likely that there would have been serious unemployment, certainly in urban areas, had not exports of light, labour-intensive manufactures grown so rapidly. At least, this can reasonably be inferred from estimates of the share of employment due to exports.

Table 14 presents estimates taken from a recent study based on input-output data. The indirect employment included in the 'total' estimates accounts only for that required in the domestic production of intermediate goods used in exports, so that multiplier and foreign exchange effects on employment are neglected. Even so, exports are seen to have accounted for more than one-quarter of manufacturing employment and close to 10% of total employment in 1970. The contribution of export expansion to increased employment is even more impressive. The same study estimates that between 1960 and 1970, the growth of exports was (directly and indirectly) responsible for 38% of the growth of employment in manufacturing and 33% of the growth of total employment.

Korea has also been successful in increasing the degree of capacity utilization within the manufacturing sector. The most reliable avail-

able statistics showing the trend of capacity utilization rates are based on electricity usage data and define 100% capacity utilization to be equal to plant operation 24 hours a day, 365 days a year. On this basis, the aggregate capacity utilization rate within manufacturing as a whole is estimated to have increased at an annual compound rate of 7.2%, from 18% in 1962 to 32% in 1971 (the survey from which these results are taken does not extend beyond 1971).⁴² In terms of the measure used, 32% capacity utilization (on average, roughly the same as single shift operation throughout all of industry) is quite high by international standards, even including developed economies in the comparison. While it is not possible to state the degree to which the expansion of exports contributed to the increase in capacity utilization, there is little doubt that it played a significant role.

Trends in the aggregate labour-capital ratio and factor productivities within manufacturing are also noteworthy. Using data from Hong's (1976) study, these trends are summarized in Table 15. The labour-capital ratio in manufacturing rose almost continuously during the first half of the 1960s, and then fell almost continuously through 1972, again rising in 1973. By 1973 the labour-capital ratio exceeded that in 1960 by more than 15%. Both

Table 14. *Percent of employment due to exports*

	1960	1966	1970
<i>Manufacturing sectors</i>			
Direct employment in production for export	2.9	13.6	18.9
Total employment due to all exports	5.8	19.0	25.9
<i>All sectors</i>			
Direct employment in production for export	2.4	3.4	5.1
Total employment in exports	3.7	6.7	9.1

Source: Cole and Westphal (1975), Table 1.

Note: The 'A' employment estimates given by Cole and Westphal for 1960 have been converted to correspond to the 'B' estimates for 1966 and 1970 by applying the ratio of the 'B' to the 'A' estimate for 1966 to the corresponding figure for 1960.

Table 15. *Factor use in manufacturing*

	1960	1966	1970	1973
Value added (million 1970 US\$)	392.8	804.5	1,803	3,215.6
Employment (thousand persons)	477	958	1,448	2,020
Capital stock (million 1970 US\$)	772.0	1,273.2	2,137.8	2,808.5
Labour-capital ratio	0.62	0.75	0.68	0.72
Value added-capital ratio	0.51	0.63	0.84	1.14
Value added-labour ratio	0.82	0.84	1.25	1.59

Source: Hong (1976), capital stock, Table A.22; employment, Table 7.6; value added, Table A.27.

the output-capital and output labour ratios were rising continuously during this entire period: the output-capital ratio rose by 1973 to more than twice its value in 1960, while the output-labour ratio increased by nearly 100%. (Output is here measured by real value added.) Total factor productivity thus roughly doubled over 13 years, giving an annual increase of more than 5%. Here the estimated changes in total factor productivity reflect both changes in the composition of the aggregate and increased factor productivity at the micro level. The former constitutes increased economic efficiency through changes in the allocation of resources while the latter reflects increased factor utilization as well as 'pure' productivity change, which in turn may be due to changes in technique and the scale of production, or to technological progress at the micro level. There have unfortunately been no sufficiently detailed investigations to distinguish between these sources in the Korean case.

Incentives and efficiency

Additional evidence regarding the efficiency of Korean resource allocation may be found by examining the magnitude and structure of industrial incentives, including both protection measures which distort the structure of domestic prices *vis-à-vis* world market prices and subsidy measures which increase factor remuneration without directly affecting product prices. Much of the literature on trade and development argues that any substantial deviation of the exchange rate from a unified equilibrium (read, 'free trade') rate and large deviations in protection and subsidies among industries cause resources to be allocated inefficiently. There are reasons to question this view: the protection of infant industries, the need to raise revenue from tariffs, and the ability to achieve social and political goals through manipulation of the price mechanism argue in favour of some divergence between world market and domestic prices. World market prices, however, provide a standard against which the effects of incentive policies can be appraised. Large divergencies from world market prices suggest the possibility, when other justifications are lacking, that allocation of resources is inefficient.

A detailed quantitative assessment of incentive policies is required to reach meaningful conclusions regarding their impact on efficiency. Fortunately, here we may rely upon

the effective incentive study for 1968 reported upon in a previous section. There it was observed that nominal and effective protection rates were very low by international standards, while effective subsidy rates were also low. Equally important, effective incentive rates exhibit a relatively small dispersion among sectors in Korea, with those on export sales being somewhat less variable than those on domestic sales.⁴³ As is widely known, effective incentive rates measured *ex post* reflect both differential factor remuneration rates and comparative efficiency differences across sectors, so that it cannot be ascertained without further evidence whether, for example, a high effective incentive rate is associated on the margin with higher than average profits or inefficient production. But, low and relatively uniform rates obviously leave very little room for much of either excess profits or inefficiency.

In turn, one can examine the correlation across sectors between effective incentive rates and corresponding measures of resource allocation to obtain some insight into the proper interpretation of the former. Westphal and Kim (1977, Section 4.5) argue that, in Korea, estimates of effective incentives to total sales are indicative of relative efficiency (with higher rates implying lesser efficiency), for there is little evidence of factor market distortions. This proposition receives further support if one considers the speed of structural change in Korea's economy, reflecting the mobility and adaptability of its labour force and the fast pace of capital accumulation. However, estimates of effective incentives to sales in the domestic and export markets additionally reflect the differential profitability of selling in these markets. Indeed, the rank correlation between effective subsidy rates on export sales and those on total sales is only 0.26 and the simple correlation only -0.09, which suggests that incentives strongly affected effective subsidies to exports. By contrast, comparative efficiency would appear to dominate the estimates of effective subsidy rates on domestic sales, for the rank correlation between these and effective subsidy rates on total sales is 0.70 while the simple correlation is 0.48.

Table 16 gives rank correlation coefficients between various measures of effective incentive rates and resource allocation. Across sectors, neither the share of exports in output nor the growth contributions of export expansion are significantly related to effective *protection* rates on export sales. However, both are significantly (at the 0.05 level or better) and positively related to effective *subsidy* rates on ex-

Table 16. Rank correlation coefficients between effective incentive rates and resource allocation

	Share of exports in output in 1968	Percentage growth contribution of exports: 1960-68
Effective protection to exports	-0.16	-0.15
Effective subsidy to exports	0.29	0.26
Effective subsidy to total sales	0.01	0.04
	Share of imports in domestic supply in 1968	Percentage growth contribution of import substitution; 1960-68
Legal protection on domestic market	-0.27	0.03
Nominal protection on domestic market	0.30	-0.19
Effective protection to domestic sales	0.32	-0.14
Effective subsidy to domestic sales	0.40	-0.14
Effective subsidy to total sales	0.38	-0.16

Source: Westphal and Kim (1977), Table S.

Note: The correlation coefficients were calculated at the 92 commodity producing sector level, where time series data on resource allocation are available. Coefficients equal to or greater than 0.16, 0.20, and 0.27 (absolute value) are significant at the 0.10, 0.05, and 0.01 levels respectively under a two-tailed test.

ports. The results are striking, for they demonstrate the importance of tax and credit preferences within the package of export incentives and suggest that export incentives had a positive influence on the expansion of exports. Neither measure of resource allocation is correlated with the effective subsidy to total sales; however, this may be explained by observing that the production of a few of Korea's exports, in particular those from cartelized sectors (such as plywood) that seem to have behaved as discriminating monopolists, appears to have been inefficient.

The relationship between incentives and imports prompts a different set of conclusions. Shares of imports in domestic supply are inversely related to legal tariff rates. However, legal protection tends to be redundant where domestic production is well established, while it is sometimes reinforced by quantitative restrictions where domestic production does not yet constitute a relatively high share of supply. Indeed, the relationship between nominal protection and import shares is just the reverse, and the correlation is significant at the 0.01 level. The correlations between effective incentive rates on domestic sales and import shares are also positive and equally significant, indicating that import substitution had pro-

gressed least in those sectors where the level of effective incentives was highest. Moreover, though insignificant, the correlations between effective incentive rates on domestic sales and the growth contributions of import substitution are negative, which is what one would expect if import substitution had progressed least in sectors where incentives were greatest.

The results suggest that import substitution had progressed furthest in the more efficient sectors. Correspondingly, there is a significant positive relationship between effective subsidy rates on total sales and import shares, while the relationship between the former and growth contributions of import substitution is negative. However, these results are equally consistent with the alternative hypothesis that higher protection was given to the less efficient sectors, for high import shares and the absence of import substitution may constitute presumptive evidence of comparative inefficiency.

To summarize: effective incentives to domestic sales seem to reflect relative efficiency while effective subsidies to exports seem to reflect profit incentives.⁴⁴ Nonetheless, the results do not 'prove' that the allocation of resources to export expansion was affected by export incentives, any more than they 'prove' that import substitution has been generally

efficient. They merely demonstrate that the available evidence is reasonably consistent with these contentions.

CONCLUSION

Until the early 1960s, Korea followed a protectionist strategy of import substitution for what might be termed traditional consumer goods. Once import substitution could go no further in these areas, the government faced the choice of continuing with an 'inward-looking' strategy favouring import substitution for intermediate and durable goods, or adopting an 'outward-looking' strategy providing equal incentives to exports and to import substitution. On the whole, it opted for the latter. This is reflected both in the incentive policies that were firmly rooted by the mid-1960s and in the structural changes that have occurred since 1960.

Exporters have benefited from unrestricted access to imported inputs and have paid neither tariffs nor indirect taxes on inputs. But, through increasing the relative price of competing imports and hence reducing the demand for them, protection of domestic sales has led to an over-valued exchange rate, the degree of over-valuation in 1968 having been around 9%. To offset the consequent bias against exports, the government has provided several explicit export subsidies, including, among others, direct tax (until 1973) and credit subsidies and excessive wastage allowances on imported inputs. As a result, the overall (including both primary and manufacturing production) effective subsidy rates on domestic sales and exports were nearly equal in 1968. When corrected for the currency's over-valuation, both rates were close to zero.

Nonetheless, incentives were not uniform across industries (see Annex Table 1). There was some discrimination against primary exports, while within manufacturing the variation benefited less efficient exports. The less efficient manufacturing sectors received higher than average effective subsidies to exports; but, effective subsidies to domestic sales in these industries were still higher, giving rise to an apparent bias of incentives against exporting. In contrast, low nominal protection in the domestic market, leading to negative effective subsidies to domestic sales, gave rise to an incentive bias in favour of exports in the more efficient industries.

As noted below in the discussion of the role of export targets, there is justification in some

instances for interpreting high effective incentives to domestic sales, at least in part, as a subsidy to exports. Linking the ability to sell in a profitable domestic market to satisfactory export performance appears to have been the means whereby many non-traditional industries, whose initiation was fostered by the government, were encouraged to produce for export rather than sell exclusively in the domestic market. Thus newly established import-substituting industries have been generally encouraged to begin exporting almost at once.

Incentives were given to import substitution in those industries that received positive net effective subsidies on total sales. Though overall import restrictions were gradually liberalized, quotas along with high tariffs continued in force to protect a number of small and inefficient industries. Moreover, through the instruments of its planning apparatus, the government selectively promoted import substitution in a few non-traditional areas, most importantly producers goods and, of late, consumer durables and automobiles. Thus many of the explicit subsidy mechanisms used to promote exports, particularly preferential credit allocation, have also been applied to engender import substitution.

In short, though outward-looking, the government's strategy has not been one of purely neutral free trade. Incentive policies, particularly the instruments of protection, have discriminated in favour of agriculture and, within manufacturing, in favour of those sectors where there remained opportunities for substantial import substitution. But, with only a few exceptions, protection in the domestic market has been quite low by international standards. And, by maintaining the exchange rate near the free trade level and granting exporters free access to imported inputs, the government has been able overall to provide, on the average, roughly equal incentives to production for domestic sales and for export. Moreover, though subsidies are not provided on a completely uniform basis with respect to value added at world prices, traditional and more efficiently produced exports have not been discriminated against. Additionally, through extending the complete package of export incentives to producers supplying intermediate inputs to exporters, the government has avoided an undue stimulus to the use of imported inputs by exporters.

Incentive policies have contributed to the rapid expansion of exports, with annual increases averaging nearly 30% between 1960 and 1975 in terms of constant prices. Korean

entrepreneurs have shown themselves to be highly responsive to opportunities to export, with notable examples being the rapid rise of wig exports in the 1960s and later the fast expansion of electronics and footwear exports. Also, miscellaneous manufactures, the composition of which is continually changing, have long been a dynamic export sector.

The growth of manufactured exports over the past 15 years has contributed to Korea's industrial expansion in various ways. Export expansion was directly responsible for more than one-quarter of the growth of manufactured output and for an even larger fraction of the increase in manufacturing employment. In turn, the manufacturing sector has accounted for nearly 40% of both GNP and employment growth. But these figures understate the contribution of export growth; among other factors, they do not reflect the backward linkage to domestically-produced intermediate inputs, the multiplier effect due to increased consumption and investment out of the additional income earned, or the increase in economic efficiency that results from exporting in line with a country's comparative advantage.

All of the available evidence points to increased factor utilization and allocative efficiency as a result of export growth. In Korea's case, resource allocation along the lines of comparative advantage has meant not only that labour-intensive exports pay for capital-intensive imports, but also that there be an increase in the share of trade in total economic activity. In part this can be traced to its very poor natural resource endowment, which has led to an increasing dependence upon imports to supply foodgrains and especially energy sources. But the rise in the share of imports in GNP also reflects the evolution of the composition of demand, particularly for producer goods, toward products for which imports are temporarily, if not of physical necessity, a large share of supply. An important contributing factor has been the continued high import content of exports, which in turn results from Korea's export specialization in the labour-intensive processing stages and (in most cases) the delayed exploitation of backward linkages until demand is sufficient to support efficient scale plants. At the same time, protection in the domestic market has been quite low by international standards and has offered few opportunities for profitable investment in inefficient import substituting activities. The adoption of an outward-looking strategy has thus resulted in negligible overall import substitution within the industrial sector. The import substitution that

has taken place has been selective, and its structure has undergone continual change.

The structural changes induced by the shift to the outward-looking policy regime thus resulted in a more efficient allocation of resources as exports of labour-intensive manufactured products expanded to finance rapidly growing imports of foodgrains and capital and skill-intensive manufactured products. Beginning in the late 1960s and continuing into the 1970s, a smooth transition appears to be under way toward exploiting Korea's emerging comparative advantage in skill-intensive products. Textile exports, for example, have shifted toward quality articles of finished clothing and specialty items such as camping equipment and away from cloth and lower quality apparel. Simultaneously, import substitution in the producer goods sectors is proceeding selectively where economies of scale can be achieved, though there may be some cases of premature domestic production.

Part of the explanation for Korea's rapid and sustained growth thus lies in the efficiency with which available resources have been allocated, and hence in the policies adopted with the change-over to an outward-looking strategy. In addition to changes in trade policy, complementary monetary and fiscal reforms played an important role. During the first half of the 1960s, the government relaxed controls on interest rates, increased tax revenues, rationalized its internal budgeting operations, and started on a continuous campaign of varying success to stabilize inflation at a low rate. These policies led to greatly increased savings and a better directed allocation of investment funds. Without them, the resources required for rapid growth would have been lacking. In addition, wages and the cost of capital have been kept reasonably in line with relative factor scarcities.

Korea's experience with export-led industrial development has been striking not merely on the narrow grounds of GNP growth rates alone. As a result of also being labour-intensive, industrial development has produced rapid employment growth at the same time that labour productivity has been rising. Thus, Korea does not at present have a serious unemployment problem. In turn, the distribution of income is not markedly unequal. In fact, surveys reveal that the distribution of consumption expenditure among Korean households tends to be more nearly equal than it is elsewhere in the world and that this distribution does not appear to have deteriorated over time.⁴⁵ Exports have thus proven to be a powerful engine of economic growth and, due to their labour-intensity,

have contributed greatly to rapid employment growth, which in turn has doubtless been a major factor in maintaining a relatively even distribution of consumption.

While Korea's successful development derives from its outward-looking strategy and the resulting process of export-led, labour-intensive industrialization, other factors have helped. The most obvious of these is the high level of foreign assistance, during the 1950s and early 1960s, which contributed to building the infrastructure for subsequent growth. And, foreign capital inflows from all sources have continued to be substantial thereafter. Between 1960 and 1975, roughly 40% of total investment was financed from abroad. At the same time it should be emphasized that foreign capital inflows have been used efficiently: Korea's gross incremental capital-output ratio (around 2.4) is very low compared with those in other developing countries. Moreover, the availability of private foreign capital to Korea has largely been in response to its favourable export performance, so that one must be careful not to conceive of capital inflows since the mid-1960s as being 'exogenous'.

Political factors made it possible to change policy in the early 1960s and to maintain sound policies thereafter. Since shortly after the overthrow of the Syngman Rhee regime, which was partly stimulated by its economic mismanagement, Korea has had a strong government motivated and able to impose far-reaching economic policies, including frequent devaluations of the currency and tax measures which have kept government savings at high levels except immediately after the rise in energy prices. In turn, where the government has intervened in labour markets it has generally been to counter organized labour which as a result is not a powerful interest group. But, at the same time, in the framework of free labour markets, wages have risen in response to labour market conditions, so that in the fifteen years since 1960 the average real wage in mining and manufacturing increased 5.5% per annum.

Also important were the 'initial conditions' at the start of Korea's rapid industrialization. Thus, part of the growth of industry and exports may be interpreted as a return to 'normalcy' after the removal of foreign domination and the disruption of two wars. But this interpretation is valid only through the early 1960s. In turn, with respect to the determinants of income distribution, Japanese colonial occupation led to the virtual destruction of the landed aristocracy which had ruled Korea prior to the Japanese takeover. A far-reaching

land reform was initiated by the United States occupation government after World War II and completed by the Korean government in 1952. This, along with the economic dislocation caused by the wars and the departure of the Japanese, produced a relatively egalitarian distribution of assets throughout the society. Additionally, Korea inherited from its Confucian past a culture in which a very high value is placed on education. Through parents' efforts, and despite the fact that public expenditures on education in Korea have been low by international standards, it has one of the highest literacy rates in the world and a very high proportion of secondary and university graduates. The large investment in human capital has yielded a highly skilled labour force obtained without great expenditure of public resources.

While a variety of factors have contributed to Korea's successful development, the key fact none the less remains that economic policies have made a large contribution to fostering what appears to be a reasonably efficient and equitable process of industrialization. In short, given Korea's poor natural resource endowment and assuming that its comparative advantage lies in labour-intensive activities, Korea provides an almost classic example of an economy following its comparative advantage and reaping the gains predicted by conventional economic theory.

The most important lessons from Korea's experience appear to be that exports respond to incentives while efficiency in the resource allocation can be assured by operating close to a free trade regime. Both of these conclusions require further scrutiny. Nothing has so far been said about 'institutional' incentives to exports, while much deserves to be said. This concluding section will end with a brief discussion of the balance between price and institutional incentives. In turn, the evidence presented here regarding the efficiency of Korean resource allocation is only presumptive, not conclusive. And, the Korean government has relied upon infant industry protection as well as subsidies to foster the selective development of import-substituting industries. But what is unique in this regard is the pressure brought to bear by the government for infant industries to begin exporting, either directly or indirectly as suppliers of exporters, very quickly after their establishment. 'Infant industry' in a less apt characterization than 'infant exporter'.

It is not easy to gauge the importance of institutional incentives to the rapid growth of

Korea's exports. Perhaps the most difficult of these to appraise are the government-assisted export marketing efforts. The government-subsidized Korea Trade Promotion Corporation was founded in 1964 to promote Korea's exports and do market research. It has since established offices in a number of important trading centres abroad. The government also authorized the Korean Traders' Association (a private organization of exporters) to collect 1% of the value of total c.i.f. imports as an export promotion fund. And, it requires its embassies abroad to participate actively in export promotion and has sent special trade missions to a number of foreign countries as well. How to market exports effectively is an important question, which makes the absence of any serious research on the part played by the Korean government's marketing assistance particularly unfortunate.

In a complementary direction, the government established annual export targets broken down quarterly and in considerable detail by commodity, market, and domestic exporter starting in 1962. Export targets have generally been met, and indeed exceeded, for the export promotion campaign has had high priority, as may be seen in the following. Adjoining the Minister of Commerce and Industry's office is an 'export situation' room laid out so that potential target shortfalls may be found at a glance. A large staff maintains almost daily contact with the major exporters and it is not uncommon for the Minister to intercede in the event of possible difficulties in meeting targets. In turn, Korea's President receives a monthly briefing regarding current export performance and prospects. The emphasis on export promotion was given further expression in 1969 when exporters began to be graded into four classes on the basis of export performance, with the highest export achievements bringing the national medal of honour, public Presidential commendation, and a number of more material benefits including relaxation of tax surveillance.

It would be naive to conclude from this that targets independently set by the government determined actual export levels via a command-type system, for the targets were meant to be indicative and as such were set jointly by the government and the various exporters' associations. Furthermore, as noted, export targets were by-and-large exceeded, even when revised upwards during the course of a year. Though both adequate export incentives and export targets were part of Korea's overall

export promotion policy, which makes it impossible unambiguously to separate the effects of each, it is very clear that failure to provide adequate incentives would have severely retarded export growth. In this sense, export incentives were a necessary condition for Korea's phenomenal export performance. Were export targets also a necessary condition? This is a question about which there is considerable debate among knowledgeable specialists.

Possible evidence that export targets may have had a part in stimulating exports in some sectors comes from the effective incentive study in 1968. It will be recalled that several exporting sectors appear to have operated as cartels and, through protection, received higher incentives to sell on the domestic market than to export. Under the circumstances, exporting can of course be explained in terms of discriminating monopoly, but equally the government may have encouraged the formation of cartels in these industries to promote statically inefficient, non-traditional exports through using the export targeting system. In fact, export subsidies such as the wastage allowance rate sometimes appear to have been jointly negotiated between government and business simultaneously with export targets. (It is notable in this regard that there is no evidence of excess profits in these industries). But, whether these sectors would have exported less without export targets is a matter of speculation. And, in any event, these industries together accounted for no more than 20% of Korea's manufactured exports in 1968.

With respect to most exports, the targets complemented incentives without which rapid export growth would not have been possible. One important function filled by the export targeting system was to keep the government well informed regarding export performance so that timely changes could be made in incentives, often including *ad hoc* assistance to individual exporters. The other function of the export targeting system and its trappings was to publicize the importance attached by the government to exports: export incentives were well advertised and access to them was immediate. An atmosphere was thus created in which businessmen could be certain that the incentive system would reward efforts to export. Businessmen responded by taking the substantial risks of expanding production and capacity for export.

Annex Table 1. *Effective incentive rates for industry groups in 1968*

	On domestic sales		Effective protection			Effective subsidy		
	Legal protection	Nominal protection	Domestic sales	Exports	Total sales	Domestic sales	Exports	Total sales
Agriculture, forestry, & fishing	36.5	17.0	18.5	-16.1	18.1	22.5	-9.9	22.1
Mining & energy	12.2	8.9	4.0	-1.0	2.9	5.1	3.0	4.7
Total primary	35.1	16.5	17.8	-7.6	17.1	21.6	-2.7	20.9
Beverages & tobacco	140.7	2.2	-19.3	-1.9	-18.6	-25.8	14.5	-24.2
Processed food	61.5	2.9	-18.2	-2.7	-17.0	-25.2	2.3	-23.0
Construction materials	32.2	3.9	-11.5	-5.2	-11.3	-16.9	5.9	-15.9
Intermediate products I	36.6	2.8	-25.5	31.0	-19.5	-29.7	43.4	-21.9
Intermediate products II	58.7	21.0	26.1	-0.2	24.2	19.6	17.5	19.5
Non-durable consumer goods	92.3	11.7	-10.5	-1.9	-8.5	-20.6	5.4	-14.7
Consumer durables	98.3	38.5	64.4	-4.7	51.0	38.2	2.4	31.3
Machinery	52.6	29.9	44.2	-12.7	42.9	31.5	5.2	30.9
Transport equipment	62.4	54.9	163.5	-53.1	163.9	158.7	-22.8	159.1
Total manufacturing	67.6	12.2	-1.4	3.1	-0.9	-8.9	12.4	-6.5

Source: Westphal and Kim (1977), Tables 2.A and 2.B.

Annex Table 2. *Structural change: 1960 - 1968*

	Domestic demand composition		Shares in total commodity:						Direct contribution to sector's growth*	
			Output		Exports		Imports		Export expansion	Import substitution
	1960	1968	1960	1968	1960	1968	1960	1968		
	%	%	%	%	%	%	%	%	%	%
Agriculture, forestry & fishing	43.1	31.5	46.8	32.8	32.9	4.5	21.4	16.3	-0.1	- 7.9
Mining and energy	<u>1.8</u>	<u>1.8</u>	<u>2.7</u>	<u>2.4</u>	<u>25.5</u>	<u>6.2</u>	<u>1.0</u>	<u>1.1</u>	<u>15.9</u>	<u>- 3.9</u>
Total primary	44.9	33.3	49.5	35.2	58.4	10.7	22.4	17.4	1.2	- 7.6
Processed food	12.0	10.1	12.5	11.4	10.4	7.7	9.4	3.8	7.8	1.8
Beverages and tobacco	5.4	5.4	6.1	6.4	2.2	2.3	1.1	0.0	4.0	2.2
Construction materials	0.8	1.9	0.9	2.2	0.9	1.4	0.4	0.4	5.6	8.0
Intermediate products I†	10.2	14.5	8.9	15.0	4.9	24.6	16.1	16.1	17.0	14.8
Intermediate products II†	14.3	15.8	11.9	13.6	12.5	13.2	27.3	24.3	10.4	5.0
Non-durable consumer goods	9.0	7.4	8.0	10.8	7.3	34.9	13.8	2.7	36.2	6.8
Consumer durables	0.8	1.7	0.5	1.4	0.1	3.3	2.2	3.7	23.2	- 4.4
Machinery	1.8	5.6	1.0	1.7	1.7	1.5	6.4	20.8	8.0	-49.0
Transport equipment	<u>0.6</u>	<u>4.2</u>	<u>0.6</u>	<u>2.4</u>	<u>1.7</u>	<u>0.3</u>	<u>0.8</u>	<u>10.7</u>	<u>0.2</u>	<u>-41.9</u>
Total manufacturing	55.1	66.7	50.5	64.8	41.6	89.3	77.6	82.6	15.1	3.2

Source: Westphal and Kim (1977), Tables H, J, and K.

Note: Based on data at constant world prices.

Totals may not reconcile due to round-off error.

The classification of industries used here is that developed by Balassa and Associates (1971).

* Growth contributions were first calculated at the 118 sector level and then aggregated before converting to percentages.

† Intermediate products I are those at the lowest level of fabrication, for example, yarn rather than cloth or steel ingots rather than steel sheet and bars. They are also referred to in the text as basic intermediate products.

NOTES

1. Based on the then available material, Balassa (1971) provides a useful survey of Korea's development through the 1960s.
2. Manufactured exports here include SITC categories 5 through 8 except 68.
3. The slow growth of real agricultural wages between 1970 and 1975 is both inexplicable and a misleading indicator of the change in rural versus urban incomes. Other (reliable) data indicate that, if anything, average rural income increased relative to average urban income over this period. Before 1970, however, average rural income grew substantially less rapidly than average urban income.
4. For comprehensive discussions of these policy reforms, see Cole and Lyman (1971) and Brown (1973).
5. A system of short- and medium-term indicative planning was instituted with the First Five-Year Plan running from 1962 to 1967. For a description and evaluation of Korean planning, see Adelman (1969) and Westphal and Adelman (1972).
6. The index used combines wholesale price movements in Korea's major overseas markets with changes in exchange rate parities among these countries. See Westphal and Kim (1977), Section 2.
7. The almost continuous fall in the actual tariff rate paid on imports is due to the rising share of tariff exempt imports for use in export production and not to a general lowering of legal tariff rates.
8. Exports in current dollars rose by 52% in 1976 over their value in 1975.
9. Most of these are crude efforts focused on the correlation between real exports and the real effective exchange rates for exports. The correlation may be nil even though the two variables are significantly related. For the implicit model is not theoretically sound. Thus, for an economy in dynamic equilibrium, with the real exchange rate maintained at its appropriate level, real exports would continue growing even if the appropriate real exchange rate were constant over time. This factor is partially reflected in the test by Frank, Kim, and Westphal (see the text), since they include real non-agricultural output in the regression. In turn, one would expect lagged responses to the removal of trade distortions to undermine the efficacy of even this formulation, particularly if the real exchange rate remains constant after the removal of trade distortions.
10. By giving annual averages of the official exchange rate, Table 2 makes it appear that devaluations occurred more frequently than they in fact did.
11. See Westphal and Kim (1977), Sections 2 and 3, summarized in Frank, Kim, and Westphal (1975), Chapter 10.
12. In the case of commodities that are not exported, world price refers to the c.i.f. import price; for exports, world price refers to the f.o.b. export price.
13. Note that this convention implies that nominal protection is equivalent, from a resource allocation point of view, to an actual tariff rate, were it imposed at the same level. As Bhagwati (1965) has shown, this is not always true where markets are imperfect. The nominal rate tends to be greater than the equivalent tariff when domestic production or quotas are monopolized, which means that nominal protection rates in the Korean context may over-estimate the protective effects of import controls in an equivalent tariff sense.
14. The basis for this and the following comparisons with other developing countries is found in Little, Scitovsky and Scott (1970) and Balassa and Associates (1971).
15. In all cases, legal and nominal protection rates are averaged using domestic sales in world prices as weights; effective incentive rates (see below) are averaged using value added at world prices as weights.
16. The last figure cited, however, represents a biased estimate of the imposition of import controls relative to total domestic sales, for a commodity group's inclusion in the price comparison sample was based, in part, on the imposition of import restrictions.
17. The subsidy due to the export-import link system is not included, but it is known to have been very small. For details regarding the estimation procedure, see Westphal and Kim (1977), Section 3. The estimates presented here are based on the so-called 'Balassa method' for dealing with non-tradeables. Westphal and Kim also provide estimates according to the 'Corden method'. The differences between estimates under the two methods are very small. For the distinction between these methods, see Balassa and Associates (1971), p. 321 ff.
18. Formally, the effective rate of protection is defined as the percentage excess of domestic over world price value added, where the latter equals the difference between the world market price of the product and the cost of its inputs at world prices.
19. Value added so adjusted is an estimate of what value added in the sector would have been if there were no tax and credit preferences and net factor returns were unaltered from their actual value under the incentive policies followed.
20. Manufacturing is here defined to include beverages and tobacco and processed food. Removing these sectors from manufacturing changes the average

- effective protection and subsidy rates to 5.7 and 0.3% respectively.
21. These figures are respectively 14 and -1.8% when beverages and tobacco and processed food are removed from the average for total manufacturing.
22. This information and the following export shares based on Table 3.C, Westphal and Kim (1977).
23. The most careful documentation of this is to be found in Rhee and Westphal (1977).
24. The expansion of manufactured exports is calculated from data in Table 7.
25. These estimates are made on the basis of the data underlying Table 1.
26. Receipts from government transactions peaked in 1969, at slightly over \$275 million, when militarily related expenditures were nearly \$210 million, the largest figure they ever reached. Offshore procurement in Korea for the Vietnam War achieved its highest level, \$64 million, in 1971.
27. Legislation controlling non-grant foreign capital inflows was first passed in 1960. Preferences, including a rather standard package of tax concessions for direct foreign investment, were simultaneously established to stimulate the inflow of foreign capital and technology, while limits on equity investment and profit remittances by foreign investors were completely removed in 1966. The relatively low volume of direct foreign investment in Korea during the 1960s is commonly explained either by the uncertainties of its political situation or by purposeful administrative tactics that were apparently relaxed in the early 1970s; it was not due to the lack of legislated inducements.
28. The ratio of imports minus exports to investment averaged 56% between 1955 and 1975; the ratio of this difference to GNP averaged 9.6%. During the 1950s and early 1960s, Korea's continuing trade deficit was almost wholly financed by grant aid from the UN and the United States. It was not until the mid-1960s that foreign borrowing became important, but once started it assumed large proportions. In 1966, official grants were roughly equal in volume to foreign loans; by 1970, the volume of the latter was more than five times the size of the former, while less than half of the loan arrivals were from government and multilateral sources. Most of the private foreign loans flowing into Korea have come from Japan, the United States, and Western Europe; many, but by no means all, have been suppliers' credits of one form or another.
29. The foregoing information on direct foreign capital inflows is based on Frank, Kim and Westphal (1975) and Hasan (1976), as well as various statistical publications of the Bank of Korea and the Economic Planning Board.
30. Cohen (1973) gives an interesting statistic in this regard. He surveyed exporters of transistors, radios, cotton cloth, cotton yarn, baseball gloves, and wigs and found that Korean companies had initiated exports prior to the arrival of foreign firms in five out of these six products.
31. In relative terms, 1972 was a recession year in Korea, which explains the investment rate's proximity to the norm in that year; investment was more than 28% of GDP from 1969 to 1971.
32. The decomposition is that developed by Chenery (1969). See Frank, Kim, and Westphal (1975), pp. 86-96 for additional details.
33. Using the inverse Leontief matrix, the growth of demand for domestically-produced intermediate inputs has been separated into that due to domestic final demand expansion, export expansion, and import substitution; each of these components has then been added to the corresponding direct contribution to obtain the total contributions. (In the estimates of total contributions, the effect of input-output coefficient changes is included with that of domestic demand expansion.) All of the growth of demand for domestically produced intermediate inputs is counted under domestic demand expansion in the estimates of direct contributions; thus, the total contribution of domestic demand is less than its direct contribution.
34. For the source of this and the following statements, see Westphal and Kim (1977), pp. 4-37 and 38, and Tables T and U.
35. In Korean parlance, the heavy industrial sectors comprise non-electrical and electrical machinery as well as transport equipment and basic intermediate products. They thus include such products as precision instruments and electronics.
36. See Frank, Kim, and Westphal (1975), page 81 ff. Data limitations make it virtually impossible to assess trends in the domestic value added content of exports; on this point, see Cole and Westphal (1975).
37. Until recently, incentives granted to export and import-substituting activities alike have discriminated against purchases of domestically-produced machinery and equipment through tariff exemptions and easy access to low interest rate credits tied to the purchase of imported capital goods. This has been thoroughly documented by Rhee and Westphal (1977) for textile machinery. In turn, Frank, Kim, and Westphal (1975), pp. 117-119 estimate that in the late 1960s the difference between the high interest rate on domestic commercial credit and the interest rate charged on suppliers' credits to purchase imported capital goods increased the real purchase cost (i.e. including the discounted value of interest payments) of indigenous capital goods by roughly 20%. Recently, having recognized the retarding effects of its policies on the domestic capital goods sector, the government has abolished tariff exemptions for exporters on their

- capital goods imports and has established a relatively large fund to provide medium-term domestic credit at an interest rate near the world market level.
38. This feature of the incentive system is incorporated in the effective incentive estimates presented previously. Effective incentive rates on domestic sales are a weighted average of those on sales to exporters and on all other sales; nominal protection rates pertain to sales other than to exporters. In turn, the estimates of nominal export incentives in Table 2 include incentives both to exporters and to suppliers of exporters.
39. There are some instances, for example petrochemicals, where a case can be made that inefficient production has been established in part to supply exporters. However, additional import-substitution incentives have been granted in such cases.
40. In the context of a planning model, Westphal (1971) documents the potential gains from following such an investment pattern.
41. See Westphal and Kim (1977), pages 4-31, 32, and 46.
42. See Kim and Kwon (1977), Table 2, U_1 series.
43. See Westphal and Kim (1977), pages 3-24 through 26.
44. All of the correlations reported in this section remain virtually unchanged if estimates of effective incentives under the 'Corden method' are used in place of those obtained under the 'Balassa method'.
45. See Frank, Kim, and Westphal (1975), Chapter 11, for details regarding this and the following points. Adelman (1974) and Renaud (1976) survey the evidence regarding Korea's income distribution in detail.

REFERENCES

- Adelman, Irma, *Practical Approaches to Development Planning: Korea's Second Five-Year Plan* (Baltimore: Johns Hopkins Press, 1969).
- Adelman, Irma, 'South Korea', in Hollis Chenery, *et al.*, *Redistribution with Growth* (London: Oxford University Press (for the World Bank and the Institute of Development Studies, University of Sussex), 1974).
- Balassa, Bela, 'Industrial policies in Taiwan and Korea', *Weltwirtschaftliches Archiv*, Band 105, Heft 1 (1971), pp. 55-77.
- Balassa, Bela, and Associates, *The Structure of Protection in Developing Countries* (Baltimore: Johns Hopkins Press (for the World Bank), 1971).
- Balassa, Bela, *Policy Reform in Developing Countries* (Oxford: Pergamon Press, 1977).
- Bhagwati, Jagdish, 'On the equivalence of tariffs and quotas', in Robert E. Baldwin, *et al.* (eds.), *Trade, Growth and Balance of Payments: Essays in Honor of Gottfried Haberler* (Chicago: Rand McNally, 1965).
- Brown, Gilbert T. *Korean Pricing Policies and Economic Development in the 1960s* (Baltimore: Johns Hopkins Press, 1973).
- Chenery, Hollis B., 'The process of industrialization', Economic Development Report No. 146 (Cambridge: Harvard University Project for Quantitative Research in Economic Development, 1969).
- Chenery, Hollis and Moises Syrquin, with the assistance of Hazel Elkington, *Patterns of Development, 1950-1970* (London: Oxford University Press (for the World Bank), 1975).
- Choe, Boum Jong, 'An economic study of the Masan Free Trade Zone', in Hong and Krueger (1975).
- Cohen, Benjamin I., 'Comparative behaviour of foreign and domestic export firms in a developing economy', *Review of Economics and Statistics*, Vol. 60 (1973), pp. 190-197.
- Cole, David C., and Princeton N. Lyman *Korean Development: The Interplay of Politics and Economics* (Cambridge: Harvard University Press, 1971).
- Cole, David C., and Larry E. Westphal, 'The contribution of exports to employment in Korea', in Hong and Krueger (1975).
- Frank, Charles R., Jr., Kwang Suk Kim and Larry E. Westphal, *Foreign Trade Regimes and Economic Development: South Korea* (New York: National Bureau of Economic Research, 1975).
- Hasan, Parvez, *Korea: Problems and Issues in a Rapidly Growing Economy* (A World Bank country economic report), (Baltimore: Johns Hopkins Press (for the World Bank), 1976).
- Hong, Wontak and Anne O. Krueger (eds.), *Trade and Development in Korea* (Seoul: Korea Development Institute, 1975).
- Hong, Wontak, *Factor Supply and Factor Intensity of Trade in Korea* (Seoul: Korea Development Institute, 1976).
- Kim, Young Chin, and Jene K. Kwon, 'The utilization of capital and the growth of output in a developing economy: the case of South Korean manufacturing', *Journal of Development Economics*, No. 4 (1977), pp. 265-278.
- Kuznets, Paul W., *Economic Growth and Structure in the Republic of Korea* (New Haven: Yale University Press, 1977).
- Little, Ian M., Tibor Scitovsky, and Maurice Scott, *Industry and Trade in Some Developing Countries: A Comparative Study* (London: Oxford University Press (for the Organization for Economic Cooperation and Development), 1970).
- Rhee, Yung W., and Larry E. Westphal, 'A micro econometric investigation of the impact of indus-

- trial policy on technology choice', *Journal of Development Economics*, No. 4 (1977), pp. 205-238.
- Renaud, Bertrand, 'Economic growth and income inequality in Korea', World Bank Staff Working Paper No. 240 (Washington: The World Bank 1976).
- Suh, Sang Chul, 'Development of a new industry through exports: the electronics industry in Korea', in Hong and Krueger (1975).
- Suh, Suk Tai, 'Import substitution and economic development in Korea', Working Paper No. 7519 (Seoul: Korea Development Institute, 1975).
- Westphal, Larry E., 'An intertemporal planning model featuring economies of scale', in Chenery, Hollis B., *et al.*, *Studies in Development Planning* (Cambridge: Harvard University Press, 1971).
- Westphal, Larry E., and Irma Adelman, 'Reflections on the political economy of planning: the case of Korea', in Jo, S. H., and S. Y. Park (eds.), *Basic Documents and Selected Papers of Korea's Third Five-Year Economic Development Plan (1972-76)* (Seoul: Sogang University, 1972).
- Westphal, Larry E. and Kwang Suk Kim, 'Industrial policy and development in Korea', World Bank Staff Working Paper No. 263 (Washington: The World Bank, 1977).

- Ivory Coast: The Challenge of Success* by Pastiaan den Tuinder and others, published by The Johns Hopkins University Press, 1978
- Kenya: Into the Second Decade* by John Burrows and others, published by The Johns Hopkins University Press, 1975
- Korea: Problems and Issues in a Rapidly Growing Economy* by Parvez Hasan, published by The Johns Hopkins University Press, 1976
- Lesotho: A Development Challenge* by Willem Maane, distributed by The Johns Hopkins University Press, 1975
- Nigeria: Options for Long-Term Development* by Wouter Tims and others, published by The Johns Hopkins University Press, 1974
- Papua New Guinea: Its Economic Situation and Prospects for Development* by George Baldwin and others, distributed by The Johns Hopkins University Press, 1978
- The Philippines: Priorities and Prospects for Development* by Russell Cheetham, Edward Hawkins, and others, distributed by The Johns Hopkins University Press, 1976
- Turkey: Prospects and Problems of an Expanding Economy* by Edmond Asfour and others, distributed by The Johns Hopkins University Press, 1975
- Yugoslavia: Development with Decentralization* by Vinod Dubey and others, published by The Johns Hopkins University Press, 1975

World Bank Staff Occasional Papers

- A Model for Income Distribution, Employment, and Growth: A Case Study of Indonesia* by Syamaprasad Gupta, published by The Johns Hopkins University Press, 1977
- Coffee, Tea, and Cocoa: Market Prospects and Development Lending* by Shamsher Singh and others, published by The Johns Hopkins University Press, 1977
- Malnutrition and Poverty: Magnitude and Policy Options* by Shlomo Reutlinger and Marcelo Selowsky, published by The Johns Hopkins University Press, 1976
- Economic Evaluation of Vocational Training Programs* by Manuel Zymelman, published by The Johns Hopkins University Press, 1976
- A Development Model for the Agricultural Sector of Portugal* by Alvin C. Egbert and Hyung M. Kim, published by The Johns Hopkins University Press, 1975

Other Publications

- Agrarian Reform as Unfinished Business: The Selected Papers of Wolf Ladejinsky* edited by Louis J. Walinsky, published by Oxford University Press, 1977
- Twenty-five Years of Economic Development: 1950-1975* by David Morawetz, distributed by The Johns Hopkins University Press, 1977
- World Tables 1976*, published by The Johns Hopkins University Press, 1976
- The Tropics and Economic Development: A Provocative Inquiry into the Poverty of Nations* by Andrew Kamarck, published by The Johns Hopkins University Press, 1976
- Size Distribution of Income: A Compilation of Data* by Shail Jain, distributed by The Johns Hopkins University Press, 1975
- Redistribution with Growth* by Hollis Chenery, Montek S. Ahluwalia, C. L. G. Bell, John H. Duloy, and Richard Jolly, published by Oxford University Press, 1974

THE WORLD BANK

Headquarters
1818 H Street, N.W.
Washington, D.C. 20433 U.S.A.



European Office
66, avenue d'Iéna
75116 Paris, France

Tokyo Office
Kokusai Building
1-1 Marunouchi 3-chome
Chiyoda-ku, Tokyo 100, Japan

World Bank reprints

- No. 39. Shamsher Singh, "The International Dialogue on Commodities," *Resources Policy*
- No. 40. Gary Kutcher and P. L. Scandizzo, "A Partial Analysis of the Sharetenancy Relationships of Northeast Brazil," *Journal of Development Economics*
- No. 41. Bela Balassa, "The Income Distributional Parameter in Project Appraisal," *Economic Progress, Private Values and Public Policy* (North-Holland)
- No. 42. Dipak Mazumdar, "The Rural-Urban Wage Gap, Migration, and the Shadow Wage," *Oxford Economic Papers*
- No. 43. Dipak Mazumdar, "The Urban Informal Sector," *World Development*
- No. 44. Carmel Ullman Chiswick, "On Estimating Earnings Functions for LDCs," *Journal of Development Economics*
- No. 45. Clive Bell and Pinhas Zusman, "A Bargaining Theoretic Approach to Cropshar- ing Contracts," *The American Economic Review*
- No. 46. Kenji Takeuchi, Gerhard E. Thiebach, and Joseph Hilmy, "Investment Require- ments in the Non-fuel Mineral Sector in the Developing Countries," *Natural Resources Forum*
- No. 47. Shlomo Reutlinger, "Malnutrition: A Poverty or a Food Problem?" *World Develop- ment*
- No. 48. Clive Bell, "Alternative Theories of Sharecropping: Some Tests Using Evidence from Northeast India," *The Journal of Development Studies*
- No. 49. H. N. Barnum and R. H. Sabot, "Education, Employment Probabilities and Rural- Urban Migration in Tanzania," *Oxford Bulletin of Economics and Statistics*
- No. 50. Yung W. Rhee and Larry E. Westphal, "A Micro, Econometric Investigation of Choice of Technology," *Journal of Development Economics*
- No. 51. Bela Balassa and Michael Sharpston, "Export Subsidies by Developing Countries: Issues of Policy," *Commercial Policy Issues*
- No. 52. D.C. Rao, "Economic Growth and Equity in the Republic of Korea," *World Devel- opment*
- No. 53. Paul Streeten and Shahid Javed Burki, "Basic Needs: Some Issues," *World Develop- ment*
- No. 54. Larry E. Westphal, "The Republic of Korea's Experience with Export-Led In- dustrial Development," *World Development*