

TRADE AND ECONOMIC GROWTH IN THE REPUBLIC OF KOREA,

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CHAPTER I

INTRODUCTION

The Korean economy is growing rapidly. New buildings, factories, a high speed bus and subway system, the quality of clothing of the average people, improved farming methods all present the impression of increasing productive capacity.

Though one must be careful about inferring the well-being of a populace from numerical figures, gross national product is the best available indicator of an economy's productive capacity as yet devised by economists. In constant 1980 prices, the gross national product of the Korean economy has grown more than 13-fold since 1961. This corresponds to an annual compound growth rate of about 10%, one of the highest rates of growth in the world.

A phenomenal change in economic structure has accompanied the growth. The agriculture-oriented economy has been transformed into a semi-industrialized economy within a short period of 20 years. In shares of GNP, the primary sector declined from 39% (1961) to 14.5% (1982), while the secondary sector increased from 15.5% to 28.8% during the same period.¹

The question often raised among economists and layman is, "What explains the fast growth of the Korean economy?" How did the Korean economy overcome the adverse conditions created by the devastating Korean War and the lack of natural resources?

This report attempts to provide a tentative answer to such question. The analysis involves two basic forces operating upon the Korean economy, namely, impacts of international market forces and changes in the domestic capacity to produce.

Chapter II reviews the concepts of economic growth and economic development and briefly summarizes major hypotheses advanced since the end of World War II relating international trade to economic development. This serves as backdrop for the empirical analysis which follows. Also in this chapter, this report presents argument that traditional trade development theory is a useful tool of analysis but not a generally applicable theory.

Throughout the postwar years the industrial and trade patterns of the world have undergone fundamental changes, largely due to changing technology and changing structure of demand. Nevertheless, conventional trade theory and its extrapolations have remained a prime theoretical apparatus, from which the projection and redirection of thought have been slow.

Chapter III presents evidence to show that the leading sector of the Korean economy is export production. Investigation is made of the export plans of Korea as included in the series of Five-Year Economic Development Plans (1962-1981), and comparison is made with actual export performance in order to examine the role of planning in export-oriented growth of the Korean economy. Section 1 describes economic development plans and economic policies in general, and identifies the principal objectives of government policies. Section 2 investigates export plans and actual export performance of Korea, acknowledging the fact that an unusually rapid expansion of exports has provided an important impetus to growth in Korea. Relationships between export and growth in Korea from 1961 to 1983 are examined by computer analysis in Section 3. First the best model is selected according to stepwise procedures for building a polynomial regression model, and then the residuals effects are examined. The last section of Chapter III discusses available evidence for the improved domestic conditions of production. When an economy shakes itself loose from the 5,000-year old

shackles of stagnation, many problems can arise.

In Chapter IV, examination is made of one of the most serious problems faced by the modern Korean economy. It is believed that mismanagement of this problem could plunge the economy into what one may call an intermediate stagnation and repeat the disappointing experience of development evidenced in some of the Latin American countries.

One can group the history of the modern Korean economy into four parts; colonial economy (1910-1945), during which Korea was turned into a peripheral trade partner to the Japanese economy; post-liberation economy (1945-1950), which can only be defined as inflation-inspired chaos; the Korean War and subsequent recovery (1950-1960); and finally the post war development period (1961 until today). The economy had barely managed to *recover* to its pre-war level of activity by around 1958 when it experienced something resembling stability for the first time since World War II.

After a brief period of unrest, which includes the April Student Revolution and the various interim experiments in ways of organizing the government, the economy faced a new challenge and stimulus from 1961 onward. The phenomenal expansion of the Korean economy since the introduction of the First Five-Year Economic Development Plan by the military government is now an old story.²

CHAPTER II

TRADE-ECONOMIC DEVELOPMENT POLICIES

1. The Meaning of Growth and Development

What is economic growth? According to Edwin Mansfield , "There are two common measures of the rate of economic growth. The first is the rate of growth of a nation's real gross national product, which tells us how rapidly the economy's total real output of goods and services is increasing. The second is the rate of growth of per capita real gross national product, which is a better measure of the rate of increase of a nation's standard of living."³

Everett E. Hagen writes, "Economic growth refers to increase in the production per capita or the income per capita in a country. The two are not necessarily identical—some of the income flowing from production may flow to foreigners." ⁴

What is economic development? Evertt E. Hagen also says that, "The term economic development has two meanings. It is used to refer to economic growth plus improvement in the distribution of material welfare within the low-income countries. In this usage, it implies improvement in the nutrition, health, and education of the lowest income families; reduction in infant mortality among these families; and increase in the dignity of their lives. These changes do not necessarily accompany economic growth; indeed, economic growth may make the poorest families even poorer. The term economic development is also used, more technically, to refer to all the complex effects of growth, planned or unplanned, beneficial, detrimental, or neutral: to changes in the kinds of goods produced, the methods of producing them, and employment patterns; in the rate of population growth, foreign trade, urbanization, and so on; and in the distribution

of material welfare."⁵

The terms 'economic growth' and 'economic development' will be used frequently in this report. Although they do not have identical meaning, as indicated by these quotations, they will be used somewhat more loosely and interchangeably herein.

2. The Role of Trade in Economic Development

Economists have expressed diverse views about the relationship between international trade and economic development. At one extreme, some theorize that international trade tends to equalize factor income among trade partners.⁶ The implication is that a less-developed country (LDC) which trades with developed countries will clearly gain since low wages in the former could be pulled up to the level of wages prevailing in the latter.

At the other extreme, some argue that international trade inhibits the economic development of LDCs because of some "growth hindering mechanism" built in the international trade system.⁷ Looking at economic history, one indeed finds that some countries have developed rapidly with increasing trade, while others under similar circumstances have failed. Examples of the former include the U.S.A. in the 18th and 19th centuries as well as modern Australia, Japan, Korea, and Taiwan. Examples of those which have failed to develop include India, Pakistan, Sri Lanka, and several Latin American and African countries.

A general theory explaining the success or failure of a country to develop is yet to appear, although some ideas have surfaced in recent years. Samuelson's well-known factor-income equalization theorem has been criticized for its rigid assumptions of perfect competition, linear homogeneous production functions,

homogeneous labor quality, and perfect adjustment capability of all trading partners. The heavy weight of evidence against the theory renders it an "empty box", especially for explaining the case of LDCs.

Another early attempt to explain LDC cases has to do with "adverse terms of trade". For instance, Raul Prebisch argued that the low income elasticity of demand for primary goods (major export items of LDCs) and high elasticity of demand for manufactured goods (major import items of LDCs) mean a long-run tendency of deteriorating terms of trade for LDCs.⁸ Thus an equal increase of productivity in both groups of commodities would transfer the real income from LDCs to industrialized countries through relative price changes in favor of the industrialized countries. However, this hypothesis does not stand up against critical theory or hard evidence. For example, Korea's terms of trade have been deteriorating while her exports have increased rapidly during the last ten-year period.⁹

A third notable hypothesis, by Ragner Nurkse, considers "lagging demand" for primary goods during the twentieth century compared with the nineteenth century. Six reasons were suggested to account for the lagging demand. They are (1) industrial countries shift toward heavy industries which require a lower content of raw material, (2) rising share of services in industrial countries, GNP, with lower content of raw material requirement, (3) low income elasticity of consumer demand for agricultural goods, (4) agricultural protectionism in the industrial countries, (5) economizing on uses of natural resources, (6) introduction of synthetic substitutes.¹⁰

A fourth attempt to explain the plight of LDCs trade and development maintains that the export sector does not constitute a part of the host country, but instead is a part of the industrialized country from which capital and

technology came and to which the factor income returns. Hence, the so-called income multiplier effect occurs not in LDCs but in the industrialized countries. The export sector remains as an "enclave" without benefiting the host countries in terms of development stimulus such as increased savings, investment, technology, and training.¹¹ Two qualifications to this concept have provided promising approaches for explaining both the success and the failure cases of development through trade. The first qualification is the recognition of differences in degree of "enclaveness" or "spill-overs" depending upon characteristics of the export industries in LDCs. Some industries create more income and investment opportunities and training effects for the host countries than others, and LDCs vary with respect to availability of trained manpower, consumption-savings habit of the populace, internal mobility of factors of production, level of literacy, organizational ability, and the ability to accept social changes.¹²

Furthermore, as I. B. Kravis argues, trade does not necessarily provide an "engine of growth" but rather is a "handmaiden of growth", meaning that international trade provides only opportunities for rapid development of an LDC. Export earnings could be used to import capital goods and foreign technology instead of consumption goods, and hence the productive capacity of an economy could grow faster with trade than without it.¹³

Richard Caves developed a theoretical framework for analyzing the extent of spill-overs effects for an LDC by combining ideas presented in the Lewis-Fei-Ranis Labor-Surplus model and Watkins Vent-for-Surplus model. The so-called "surplus labor" is considered a disequilibrium condition which can be eliminated by exporting its services.¹⁴

The speed or rate of adjustment is constrained by internal and

international factors as discussed below. International demand for LDC (labor-intensive) goods is dependent upon the rate of GNP growth in industrial countries and the rate at which the overseas market (e.g., U.S. and Japan) adjusts itself with respect to balance of payments, unemployment created by imports of LDC goods, and "disinvestment" in the affected industries because of comparative disadvantages.

The speed of adjustment in domestic resource use in the LDC depends on several factors. First, there is the rate of labor migration from the labor-surplus sector to the industrial sector. Second, there is the rate at which the transferred labor is educated and trained to be combined with other productive factors such as physical capital, modern technology, and associated intermediate input. Third, there is also the rate of job-creation in the industrial sector, which depends partially on foreign demand for LDC goods and partially on capital formation. Fourth, the rate at which labor-using technology is adopted in export production is an important determination. Fifth, the rate at which foreign capital flows in to quicken the process of adjustment in employment creation beyond the limit set by domestic savings is equally important. Finally, one should take note of the rate at which income and employment opportunities expand in export-supporting industries indirectly through interindustry linkages.

The resource reallocation pattern between the two production activities should reveal the basis for the export-led-growth of an LDC. A comparative study of several LDCs would be useful in providing empirical material for theorizing. T.M. Rybczynski has provided a proposition relating trade and economic growth.¹⁵ The Rybczynski theorem is that at constant prices, an increase in one factor endowment will increase by a greater proportion the

output of the good intensive in that factor and will reduce the output of the other good.

3. The Strategic Model of Trade-Development Policies

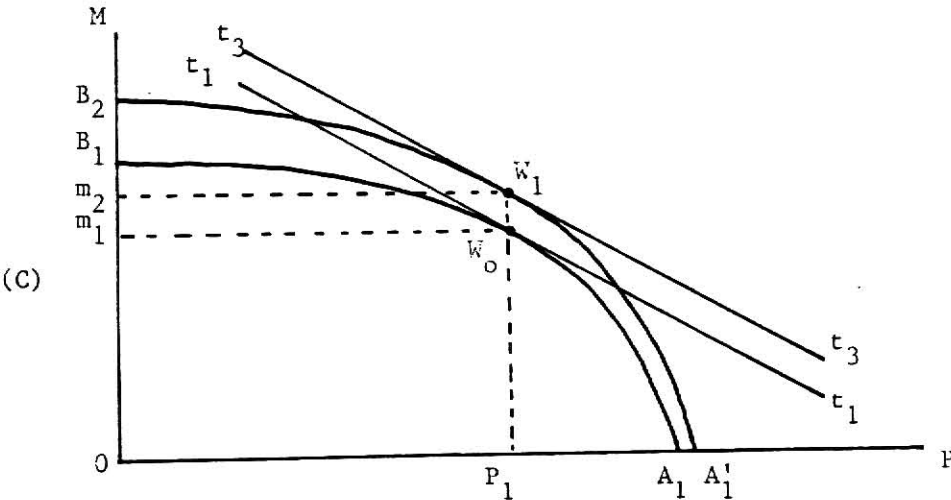
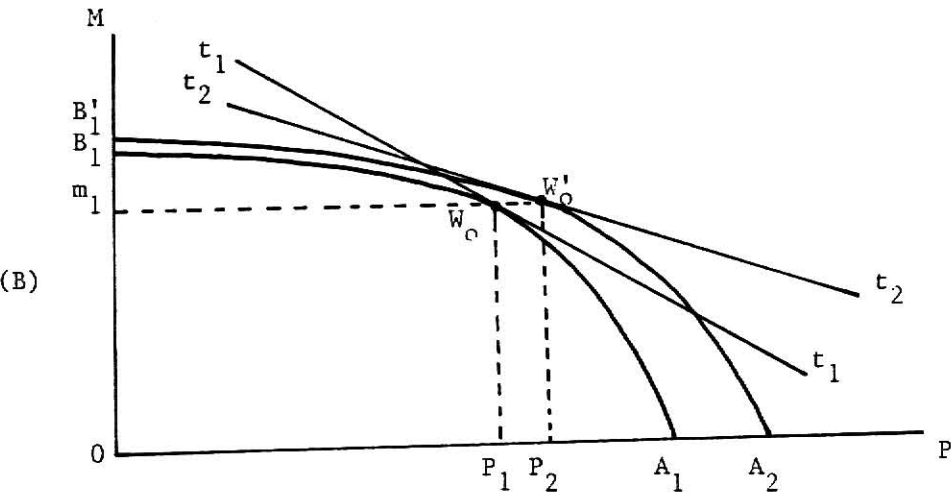
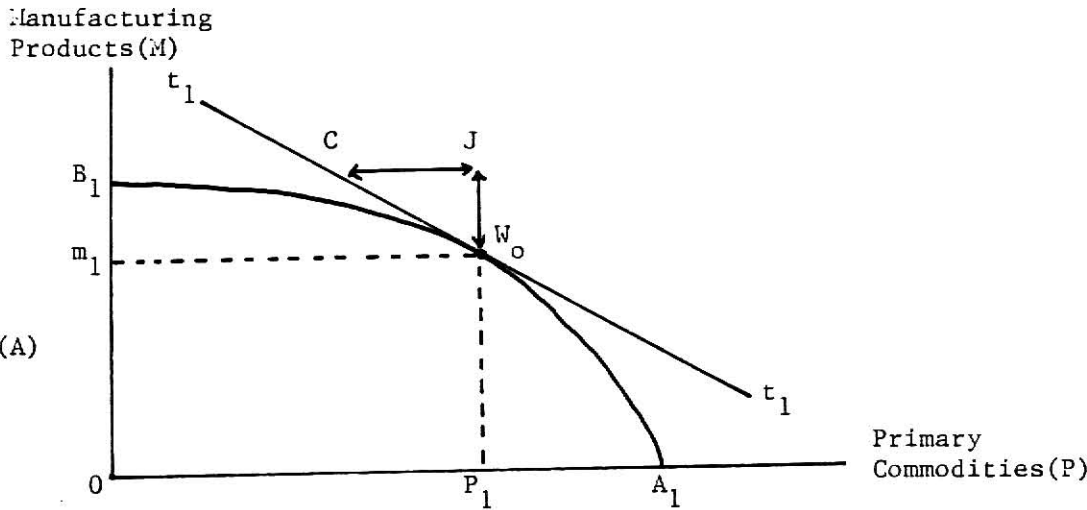
(1) Production Restructuring

The comparative cost doctrine and conventional allocation criteria cannot be applied to developing countries without taking into account the dynamic setting that changing patterns of world trade have created, which do not allow the primary goods producing countries to accommodate their traditional production pattern to contemporary world trade.

Having considered the above structural problems, Lary and Maizels proposed that developing countries have to achieve a rapid increase in their exports of manufactured goods to developed countries by undertaking production restructuring.¹⁶ In Figure 2-1, the AB curve depicts a production possibility curve characterized by increasing cost, illustrating a primary commodity biased curve associated with the export dimension. In an open economy the two-way trade between a primary commodity biased country and a manufactured products biased country is transacted by establishing their terms of trade accordingly. The vertical dimension indicates industrial products (M) and the horizontal dimension primary commodities (P).

By trading JC of P commodities for JW of M products, point C, which lies above the production possibility curve of the P commodity country, added utility is created through trade. By adapting the recommendation of the comparative advantage theorem in line with abundant factor utilization, the A_1B_1 production possibility curve could be expanded as A_2B_1' production possibility curve by

Figure 2-1. The Production Possibility Curve



producing more along the commodities dimension as shown in Figure 2-1(B).

The expansion of the P commodities dimension is primarily derived from the comparative cost advantage by taking for granted that the demand for P commodities exists. The inelastic demand nature of P export commodities in comparison with the elastic demand nature of M products tends to result in unfavorable terms of trade to the P commodities biased country.

Since income elasticity influences the volume of exports, and since price elasticity influences export earnings, the demand intensity for P commodities grows more slowly than the demand intensity for M products. Moreover, P commodities industries are more subject to a high degree of competitiveness among suppliers. The P commodities biased country seems situated unfavorably in trading with M products biased countries, owing to the inelastic demand for P commodities and monopolistic competition which characterized the P industry, leading to lower price.

The A_2B_1' production possibility curve has a slope of t_2t_2 at point W_0' , implying that the terms of trade worsened as compared to the slope t_1t_1 . That is, the increase in P commodities caused welfare gain to the P commodities country. As a solution to the above problem, production restructuring is brought about, restructuring export industries and reorganizing export commodities accordingly. The rationale for the production restructuring is twofold: one contention is that M industrial expansion and P existing industries are complementary, as seen in the working economics of advanced countries in the West. Namely, the criteria of economic development and growth are identified with the economics of advanced countries in the West and with expansion of M industries. Another contention is that the demand argument has been stressed in shaping production restructuring, implying that trade can stimulate development

when foreign demand is adequate.

The A_1B_1 production possibility curve expands toward the M products dimension instead of the P commodities dimension, as shown in Figure 2-1(C). The $A_1'B_2$ is projected in order to show that the welfare level of the P commodities biased country improved by increasing the production and export of M industries proportionally more than in case illustrated in Figure 2-1(B). The t_3t_3 slope line has a higher plateau than either the t_1t_1 or t_2t_2 slopes.

The important qualification of the above contention is that the hypothesized growing M products exportable from new industries in the initial stage are generally of marginal quantity, not affecting the prevailing price level of M products in world markets.

In other words, the new producer of M products is at the initial stage viewed as a price taker in the world markets dominated by large M producing countries. Moreover, there is a M products horizon, allowing selection from among them. Markets prospects and manufacturing capability should be taken into account in the selection process by a new M producing country.

Thus, according to H. B. Lary, "if the two countries are of unequal size, the reciprocal aspect of demand may not come into play at all. The price ratio of the larger country will prevail. This is the very importance of being unimportant".¹⁷

(2) Progressive Commodities

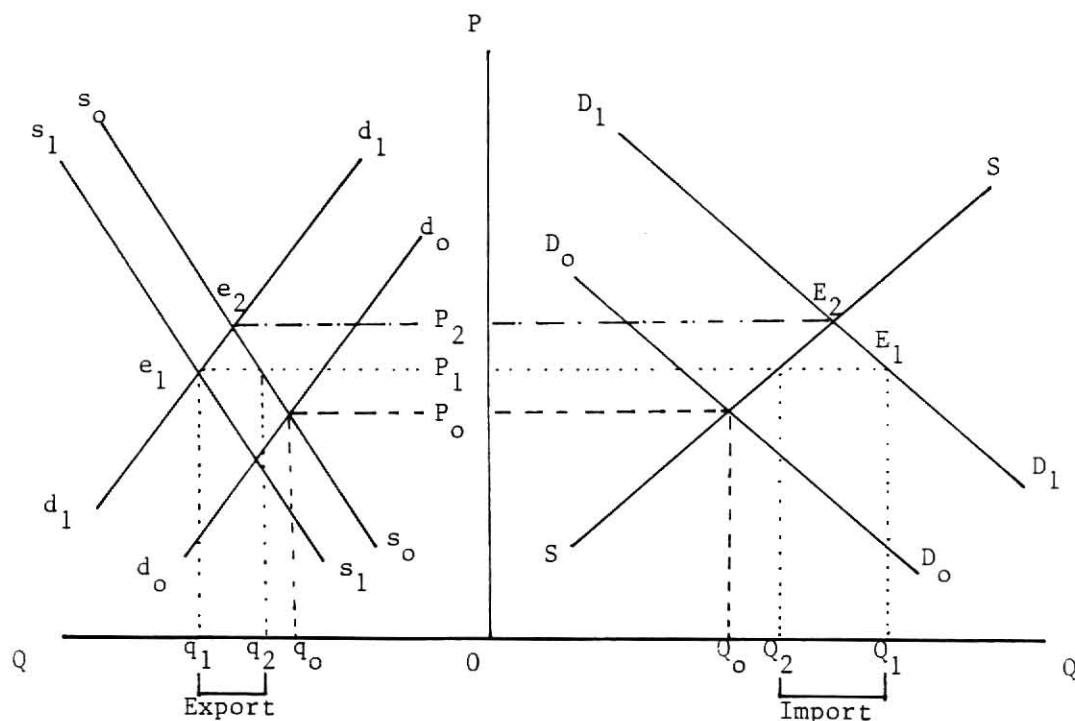
World demand has changed in character, discriminating against primary commodities but favoring industrial products. The developing countries should engage in export industries of progressive commodities such as light manufacturing products responding to the world trade pattern, e.g., tiles, toys,

wigs, artificial flowers, plywoods, hand tools, simple electric appliances, processing tools and the like.

Developing countries should engage in expanding M products industries selectively. "Exports can be the 'leading' sector, i.e., they can provide the dynamic stimulus to growth in the rest of economy; or they can be a 'lagging' sector as, for example, if development concentrates on the domestic market and the demand for imports outstrips the capacity to import."¹⁸

The crucial decisions concern the selection criteria of M products by the developing country for the leading sector, considering the dynamic nature of product supply and the side diversity in M products category. In Figure 2-2, the D_oD_o and S_oS_o lines are the initial demand and supply curves of developed countries which tend to determine the price level, P_o , of world trade.

Figure 2-2. Progressive Commodities in International Trade



The d_0d_0 and s_0s_0 also indicate the demand and supply schedules of the developing country, intersecting at P_0 . The premise taken is that the growing income of developed countries over time will shift the demand curve for M products upward, indicating a higher level of demand. In terms of comparative static analysis, some M products are strongly demanded in the commodity market, pushing price upward. This phenomenon in turn stimulates the marginal supplier of these products to be more responsive.

The demand curve D_1D_1 results from the growing income level of the high income market causing a new price level P_2 in the short run. In response to this, there is an increase in supply by the developing country represented by the curve s_1s_1 and a new price is established at P_1 .

Moreover, economic development generated from the strong demand abroad would further bring about increasing demand at home. This process attracts new investment, and greater production reduces units costs. The chain process of demand and supply in the developing country, which involves production restructuring associated with compositional change of export commodities, accelerates economic development.

In the context of Figure 2-2, advanced countries will respond to the increase in demand in their home markets by increasing their production from Q_0 to Q_2 and importing from the developing country would increase from Q_1 to Q_2 . The supply quantity of the developing country would increase from q_0 to q_1 , out of which the quantity q_0q_2 will be consumed at home and q_1q_2 will be exported to advanced countries. The quantity traded between advanced country and developing country tend to coincide.

In summary, the increased demand in developed countries generates the market disequilibrium to suppliers at home and abroad, however, after the

increase in supply a new equilibrium level is established at P_1 having more production by both domestic and foreign suppliers. In an expanding market there has been little resistance from domestic suppliers in the advanced countries. The progressive commodities of a developing country are associated largely with selected M products, derived from production restructuring and export commodity recomposition.

Countering the above trend, developing countries should learn that as they industrialize in any industry to begin with, it is a difficult task. In comparing whether the country should tackle a conventional industry or a progressive industry, the difference of difficulties could be of marginal degree. If so, then the country should strive to industrialize the progressive industry even though the short run pay off might be slim, the long run reward would be not only greater but also the cumulative and chain industrialization would be enhanced.

(3) Product Cycle

Raymond Vernon introduced the concept of the product cycle.¹⁹ The product cycle in an international economy is closely associated with growing technological innovation which brings about a series of shifts in the composition of major trading commodities. This theory is analyzed here in light of the postwar phenomenon of the changing pattern mix in world trade.

The product cycle theorem is relevant to a country involved in production restructuring under the changing world trade patterns. The direction of production restructuring would be associated with selecting a few M products. This becomes a vital factor in determining the degree of industrial success. Since success breeds further success, the correct direction of industrialization could orient the economy toward an industrial spurt. The product cycle model is

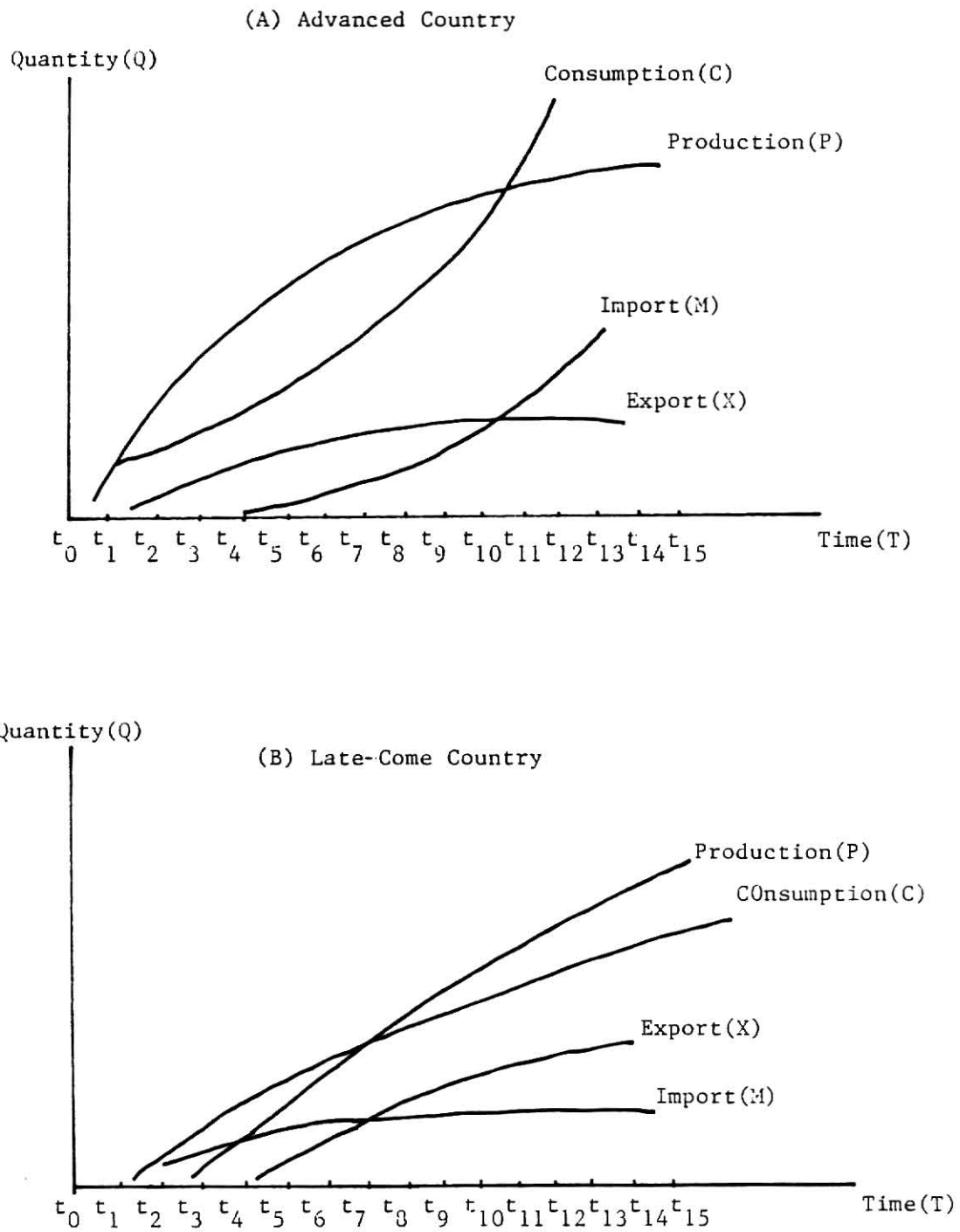
theoretically significant, so much so as to be worthy of examination both ex post and ex ante.

The implication for developing countries is that the sequence of diverse and multiple product cycle processes provides an opportunity to developing countries to engage in higher productive industries, namely manufacturing industries, while developed countries tend move to sophisticated production coupled with vertical industrial growth, leaving certain industries to those developing countries which are undertaking production restructuring toward manufacturing industries.

In Figure 2-3(A), the production process from new commodity through maturing commodity to standardized commodity status in the advanced country is shown broadly in order to characterize the implicit nature of the product cycle process in the country which introduces new commodities. The time dimension is indicated by the T horizon while the quantity dimension is shown by the vertical dimension. The t_0 marks the introduction of a new commodity in the high-income market of an advanced country. The period from t_0 to t_2 represents the market pioneering duration requiring the cost of marketing in spreading information about and advertising the new product, both at home and abroad. From the t_2 onward, the production stimulated by market acceptance will be boosted toward its maturing stage, along with exploiting economies of scale.

In this stage the products industry would be called a *progressive industry*, and it will realize high productivity gains and profits. In addition, the introduction of a series of new commodities one after another will result in the series of the production processes for new products, maturing products and standardized products. The incentives from the market mechanism tend to feed the product cycle processes causing continuous introduction of new commodities

Figure 2-3. International Trade Pattern Associated with Product Life Cycle



in the high-income markets of advanced countries. The high-income market is a suitable place for introducing new products. This market lures new commodities characterized by innovation.

In Figure 2-3(B), the product process of a developing country is depicted in the context of the product cycle version. The t_1 represents this country being exposed to a new imported commodity, coinciding with consumption up to the point when she begins production, t_2 . The production might be encouraged by the various policy measures such as import controls and subsidies, for which the infant industry argument could be exploited.

The rationale of the infant industry argument is that a catch-up industry is in a competitively disadvantageous position vis-a-vis an established industry in an advanced country. Therefore, the argument prescribes protection. However, "it is essential that the production should be confined to cases in which there is ground of assurance that the industry which it fosters will after a time be able to dispense with it."²⁰ The point t_4 in Figure 2-3(A) and (B) indicates both the imports from an advanced country and the export from a late-come country. The character of this stage is extremely complex in nature due to the international market mix of advanced, semi-advanced developing countries and late-developing countries. The product of the late-come country could establish acceptability in its home market as well as in third-country markets of the late-come countries, and its entry into the high-income market of the advanced country could be expedited in turn.

The duration from t_2 to t_{15} in Figure 2-3(B) is characterized by the version of product cycle in commodities originally invented abroad. In other words, the diversity and multiplicity of new products as implied in the above discussion have allowed a late-come country involved in similar sequences of the

product cycle process to proceed from new products to maturing products and standardized products after acknowledging the time-lag between the advanced country and the late-come country.

The less productive industries of an advanced country could be classified as progressive industries to the developing country which is executing production restructuring in line with the changing commodity pattern of world trade as well as with the international product cycle process.

CHAPTER III

EXPORT-LED GROWTH IN KOREA

1. Economic Development Plans and Economic Policies

In 1954, Robert R. Nathan and Associates prepared a reconstruction plan for the United Nations Korean Reconstruction Agency (UNKRA). However, the Nathan Report, which envisioned a self-sufficient economy able to exporting large amounts of rice and minerals, was simply ignored by the government.

The Three-Year Economic Development Plan (1960-62) of the Ministry of Reconstruction emphasized investment in social sectors and self-sufficiency in food production, small and medium sized industries and selected key industries. The proposed investment program emphasized increasing capital goods production and discouraging excessive growth in consumption goods industries in order to achieve a balanced industrial structure. However, due to the student revolution in 1960, the Plan did not have a chance to be implemented.

Although there were several export promotion schemes, the exchange rate remained overvalued and the emphasis lay on import substitution in such basic necessities as flour milling, sugar refining and textile manufacturing. The import substitution policy was financed by foreign assistance funds and included protective tariffs, quotas and a multiple exchange rate system. In the fifties, the amount of U.S. aid was determined more or less by the estimated needs for investment and basic consumption.

The First Five-Year Economic Development Plan (FFYEDP) stated that the ultimate course for the Korean economy was industrialization through modernization of industries, and considered the first plan period (1962-1966) as a preparation stage for such an ultimate course.²¹ The major objectives were set

as follows: (1) attaining of self-sufficiency in the production of food, (2) expansion of key industries, electricity and transportation, (3) increased employment, (4) improvement of balance of payments through export expansion and (5) mixed mobilization of domestic resources and increased foreign capital inflow. Production of coal, cement, fertilizer, steel ingot and refined petroleum were listed as key industries to be promoted for import substitution.

However, the plan did not emphasize a completely self-sufficient industrial structure and accepted the idea of financing imports with increased exports. The major emphasis in trade policy was placed on expanded production of import-substitute goods, especially agricultural products such as rice and barley, restricted imports of consumer goods and export promotion through increased payments of export bonuses, expanded short-term export financing and income tax exemption on export activities.

Faced with serious crop failures in 1962 and 1963, the military government was willing to rely on expansionary monetary policies. When the inflationary financing produced harmful effects on resource allocation, intensive efforts were made to increase domestic savings by raising the taxes and by increasing interest rates on time and saving deposits.

The First Five-Year Plan did not present a well-considered set of economic policies, and even appeared misguided in view of the poor performance during the first year of the plan and the subsequent inflation. Nevertheless, it did suggest a number of new policies which were subsequently followed and which later provided the real impetus for Korea's rapid growth. These included the encouragement of exports and domestic savings and the maintenance of realistic market-oriented interest and exchange rates.

It is difficult to assess the importance of these suggestions in bringing

about the actual implementation of policy. However, at least it can be said that the tendencies expressed in the plan were not opposed to the policy directions which were eventually followed.²² The basic objectives of the Second Five-Year Plan (1967-1971) were to modernize the industrial structure by promoting chemical, steel and machine industries; to build the foundation for a self-supporting economy by increasing domestic savings and by promoting exports of labor-intensive consumer goods and import-substitution of foods and capital goods; and to expand employment to absorb disguised unemployment in the agricultural sector.

Industrialization through export expansion was taken as the unavoidable course for growth of the Korean economy. Manufacturing of steel, refined petroleum, aluminum, fertilizer, soda-ash, cement, motors, automobile and ships were listed as key industries for expansion during the plan period.²³ It is remarkable that it was during the Second Five-Year Plan period of unprecedented expansion for labor-intensive light manufacturing goods exports, that the government established the Machine Industry Promotion Law and the Shipbuilding Industry Promotion Law in 1967, the Electronics Industry Promotion Law in 1969 and Steel Industry Promotion Law and Petro-chemical Industry Promotion Law in 1970.

Each of these laws specified various tax-cum-financial supports for their respective industries. However, these promotion schemes were not properly implemented until the beginning the Third Five-Year Plan period. The basic objectives of the Third Five-Year Plan (1972-1976) were to develop the agricultural sector, to improve balance of payments through export expansion, and to promote heavy and chemical industries. Essentially, all the Five-Year Plans have emphasized domestic savings, export promotion, investments in social

sectors, selective import substitution of intermediate and capital goods, and self-sufficiency in major food grains.

Perhaps the most notable aspect of the Third Five-Year Plan was the emphasis on heavy and chemical industries.²⁴ Iron and steel, copper, lead, zinc, cement, sheet, glass, pulp, industrial machines, construction machines, farm machines, electrical machines, automobiles, shipbuilding, electronics, synthetic rubber, fertilizer and petro-chemical industries were listed as the key industries.

The Plans were annually revised through the Overall Resource Budget (ORB) on the basis of actual performance and updated forecasts. One major revision of the Second Five-Year Plan was to expand investments in the power and transportation sectors to accomodate rapid overall growth. The annual revision conducted by the ORB primarily concerned the numerical targets for investments, output and exports. Consequently, little revision has been made in development policies.

The basic objectives of the Fourth Five-Year Plan (1977-1981) were to achieve a complete self-reliance in investment financing, to achieve a current account surplus and to shift the industrial structure towards so-called heavy and chemical industries as understood to consist of steel products, finished metal products, electronics, electrical and non-electrical machinery, shipbuilding and other transport equipment manufacturing. These goals were believed to be essential to build an economic structure for self-sustaining growth.²⁵

The Fifth Five-Year Plan (1982-1986) was developed in 1981 and the word of social was added in the name of plan. But the government of Korea changed this plan in 1983 because of changing of domestic and international economic conditions. The chief contents of the Fifth Five-Year Plan are summarized in Table 3-1.

Table 3-1. The Fifth Five-Year Economic & Social Development Plan (Revised)

	Unit	1982	1983	1984	1985	1986
GNP	100 Million US \$ (1980 Price)	687	750	806	866	931
Growth Rate	%	5.6	9.2	7.5	7.5	7.5
Per capita GNP	US \$	1800	1875	1969	2153	2325
Industrial Structure	Current Price Composition	100.0	100.0	100.0	100.0	100.0
Agri. For & Fis.	%	14.8	13.9	13.4	12.7	12.1
Min. & Manufacturing	%	29.5	29.2	29.7	30.2	30.7
Manufacturing	%	28.0	27.8	28.4	28.9	29.5
S.O.C & Others	%	55.7	56.9	57.0	57.1	57.2
Total Population	1000 Persons	39,331	39,951	40,578	41,209	41,839
Economically Active Population	"	15,080	15,254	15,715	16,183	16,641
Employed Population	"	14,424	14,613	15,086	15,552	16,009
Unemployment (Unemployment Rate)	" %	656 4.4	641 4.2	629 4.0	631 3.9	632 3.8
Balance of Payments						
Current Balance	Million US \$	-2,650	-1,600	-1,000	-300	400
Commodity Exports	"	20,879	23,100	26,500	30,900	35,700
Commodity Imports	"	23,474	24,900	27,500	31,000	35,100
Long-Term Capital	"	1,230	1,250	1,200	700	200
Foreign Exchange Reserves	"	6,984	7,000	7,400	7,800	8,500
Foreign Exchange Rate	Won per Dollar (End of The Year)	748.8	800	780	780	780
	Won per Dollar (Yearly Mean)	731.4	776	790	780	780
Money & Banking	Increase Rate %					
Total Money (M ₂)	%	27.0	15.0	12.5	12.0	11.0
Money (M ₁)	%	45.6	13.0	9.5	9.0	8.5
Times & Savings Deposits	%	18.8	15.7	13.6	13.1	12.6
Domestic Credit	%	25.0	14.8	12.4	10.1	9.2

* Sources: Korean Economic Indicators,
Economic Planning Board, 1984.3

2. Export Plan and Actual Export Performance

The First Five-Year Plan which was considered fairly ambitious at the time of its initiation amplified the need for foreign exchange and domestic savings. The inflow of U.S. aid, which peaked in 1957 at nearly 0.4 billion U.S. dollars, had already started its irreversible decline. The government tried to attract foreign loans and investment by improving incentive schemes and institutional arrangements. At the same time the government initiated a vigorous export promotion policy in order to satisfy the foreign exchange requirements of the planned investment projects and to offset the declining trend in U.S. grant-in-aid.

The Plan projected an export growth at around 20% per annum during 1962-1966, i.e., from 65.9 to 137.5 million U.S. dollars. Major export items included such primary products as fish, swine, rice, dried-laver, raw silk, tungsten, anthracite and other mineral ores, etc. Only about one third of total commodity exports in the target year were expected to consist of manufactured goods and nearly half of these would consist of bonded processing. Expected major manufactured exports as listed in the Plan included clothing, straw-work goods, handicrafts, pig iron, ginseng products, menthol balls, saccharin, bismuth and copper.

Actually, however, commodity exports expanded at around 45% per annum during 1962-1966 and about two-third of total exports in the target year consisted of manufactured goods. Furthermore, quite a few unexpected items emerged as major manufactured exports including clothing, wigs, steel sheets, woolen fabrics, synthetic yarns and fabrics, rubber tires and tubes, radios, etc. About half of total commodity exports in the target year consisted of the following six items: textiles, clothing, wigs, footwear, plywood and steel sheets.

Table 3-2. Export Plan and Actual Performance (First FYEDP)

Million US Dollars

Export Plan		
Commodity	Base Year (1960)	Target Year (1966)
All Commodities	32.9 (100.0%)	137.5 (100.0%)
Food & Live Animals	10.3 (31.2%)	35.8 (26.0%)
Other Crude Materials	17.8 (54.1%)	56.1 (40.8%)
Manufactured Goods	4.9 (14.8%)	45.7 (33.2%)
Cotton Fabrics	2.9 (8.8%)	3.0 (2.2%)
Silk Fabrics	- -	0.8 (0.6%)
Kohemp Fabrics	- -	1.0 (0.7%)
Other Textiles	- -	1.0 (0.7%)
Footwear	- -	0.8 (0.6%)
Straw-Work Good	- -	2.8 (2.0%)
Handicrafts	0.2 (0.6%)	2.1 (1.5%)
Plywood	- -	2.0 (1.5%)
Pig Iron	0.5 (1.5%)	0.5 (0.4%)
Ginseng Products	0.2 (0.6%)	0.6 (0.4%)
Menthol Boll	- -	1.9 (1.4%)
Saccharin	- -	1.1 (0.8%)
Bismuth	0.4 (1.2%)	1.0 (0.7%)
Coppér	0.3 (0.9%)	0.6 (0.4%)
Misc. Manufactures	0.4 (1.2%)	6.2 (4.5%)
Bonded Processing	- -	20.0 (14.5%)
Actual Exports		
Commodity	Target Year (1966)	
All Commodities	250.3 (100.0%)	
Food & live Animals	47.4 (18.9%)	
Other Crude Materials	48.3 (19.3%)	
Manufactured Goods	154.6 (61.8%)	
Cotton Fabrics	10.1 (4.0%)	
Woolen Fabrics	2.2 (0.9%)	
Synthetic Yarn & Fabrics	9.5 (3.8%)	
Other Textiles	12.7 (5.1%)	
Footwear	5.5 (2.2%)	
Clothing	33.4 (13.3%)	
Wigs (& Human Hair)	15.5 (6.2%)	
Plywood	30.2 (12.1%)	
Steel Sheets	7.1 (2.8%)	
Rubber Tires & Tubes	1.3 (0.5%)	
Radio	3.2 (1.3%)	
Electric Lamps	0.9 (0.4%)	
Cement	0.5 (0.2%)	
Copper	1.1 (0.4%)	
Misc. Manufactures	8.9 (3.6%)	

*Source: First FYEDP(1962-1966) and Ministry of Finance,
Foreign Trade of KOREA : 1966.

The Plan considered export promotion as a means of financing necessary import requirements by export revenue as much as possible, but not as a means for so-called "outward-looking" export-oriented growth.²⁶ Most of the policies actually implemented during 1962-1966 were not contemplated in the Plan. Table 3-2 shows the export plan and performance during the First Five-Year Economic Development Plan (1962-1966) in Korea.

The Second Five-Year Plan (1967-1971) projected an average annual growth rate of 17% for commodity exports, expecting more than one-third of total exports to consist of primary goods in 1971. In fact, exports increased by nearly 35% per annum during 1967-1971 and more than 80% of total exports consisted of manufactured goods in 1971. Exports of clothing amounted to 300 million U.S. dollars and those of various electronics products such as thermionic valves and tubes and transistors amounted to about 60 million U.S. dollars in 1971. Thus, while the plan anticipated the direction of future changes in the structure of industry and trade it underestimated the extent of those changes.

Although Korea began to intensify its promotion of import substitution in the early sixties, because of balance of payments problems in financing various investment projects it also had to promote export expansion. The export subsidy policies were not purposely designed to discriminate among industries. However, due to the limited export potential of the primary sector, the share of the manufactured products in total commodity exports, which never exceed the 20% level before 1961, steadily increased to more than 80% of total commodity exports by 1971.

As one of the most densely populated countries in the world, Korea possessed a strong potential for labor-intensive manufactured products for export, and this latent potential has been effectively exploited by positive

Table 3-3. Export Plan and Actual Performance (Second FYEDP)

Million US Dollars		
Export Plan		
Commodity	Base Year (1965)	Target Year (1971)
All Commodities	175.1 (100.0%)	550.0 (100.0%)
Food & Live Animals	29.1 (16.6%)	121.4 (22.1%)
Other Crude Materials	39.0 (22.3%)	86.9 (15.8%)
Manufactured Goods	107.0 (61.1%)	341.7 (62.1%)
Cotton Fabrics	10.5 (6.0%)	37.0 (6.7%)
Woolen Fabrics	2.2 (1.3%)	10.0 (1.8%)
Silk Fabrics	2.5 (1.4%)	5.0 (0.9%)
Synthetic Fabrics	2.2 (1.3%)	5.5 (1.0%)
Other Textiles	14.6 (8.3%)	58.5 (10.6%)
Ceramics	0.2 (0.1%)	15.0 (3.7%)
Clothing	24.6 (14.1%)	83.9 (15.3%)
Wigs	4.3 (2.5%)	10.0 (1.8%)
Footwear	4.2 (2.4%)	5.7 (1.0%)
Plywood	18.0 (10.3%)	40.0 (7.3%)
Steel Plats	10.4 (5.9%)	3.0 (0.6%)
Radio Receiver	1.4 (0.8%)	8.0 (1.5%)
Plastic Products	-	6.0 (1.1%)
Cement	0.8 (0.5%)	6.4 (1.2%)
Toys	-	10.0 (1.8%)
Other Manufactures	11.1 (6.3%)	37.7 (6.9%)
Actual Exports		
Commodity	Target Year (1971)	
All Commodities	1,067.4 (100.0%)	
Food & live Animals	84.9 (8.0%)	
Other Crude Materials	106.2 (10.0%)	
Manufactured Goods	876.3 (82.0%)	
Cotton Fabrics	31.0 (2.9%)	
Cotton Yarn	16.2 (1.5%)	
Synthetic Fabrics	16.4 (1.5%)	
Synthetic yarn	22.8 (2.1%)	
Cordage, Rope, Net	17.2 (1.6%)	
Other Textiles	20.7 (1.9%)	
Clothing	304.3 (28.5%)	
Wigs	69.9 (6.6%)	
Footwear	37.4 (3.5%)	
Plywood	124.3 (11.6%)	
Steel Plates	20.1 (1.9%)	
Radio Receiver	5.8 (0.5%)	
Electronics Products	59.2 (5.6%)	
Cement	10.6 (1.0%)	
Handbags & Travel Goods	5.4 (0.5%)	
Other Manufactures	115.0 (10.8%)	

* Source: Second FYEDP (1967-1971) and The Bank of KOREA,
Economic Statistics Yearbook

government policies. Export promotion policies gathered momentum as time passed, and as a result people began to identify the period after 1962 as the export-oriented growth phase in Korea's development. However, Korea also achieved a very significant level of import substitution in such items as cement, fertilizer, refined petroleum, textile yarn and fabric during this period (1967-71), which in due course started to emerge as a new generation of exportables. Import substitution and export expansion may proceed together, possibly with some time lags.

The Third Five-Year Plan (1972-1976) projected a 28% annual growth for commodity exports with expansion of the the proportion of so-called heavy and chemical products in total exports from about 14% in 1970 to about 33% in 1976.²⁷ Exports actually expanded at around 45% per annum in nominal prices and at around 33% in 1970 constant U.S. dollar prices, in spite of the oil crisis and world-wide recession in 1974-1975. The Plan made some preposterous linear extrapolation in export expansion as exemplified by the projection for wigs, while underestimating export potential for clothing and various steel products. As a whole, however, the shifts in export patterns occurred along the lines delineated by the Plan. It was emphasized that 1972-76 was to be a period in which to lay foundation for export expansion of heavy and chemical products and indeed their share in total exports has significantly increased since that time. Table 3-4 shows the export plan and performance during the Third Five-Year Economic Development Plan (1972-1976) in Korea.

The Fourth Five-Year Plan (1977-1981) projected a 16% annual increase in commodity exports in 1975 constant U.S. dollar prices, and strongly emphasized a structural shift in commodity composition of exports toward heavy and chemical products. The proportion of heavy and chemical products in total commodity

Table 3-4. Export Plan and Actual Performance (Third FYEDP)

Million US Dollars		
Export Plan		
Commodity	Base Year (1970)	Target Year (1976)
All Commodities	835.2 (100.0%)	3,588.5 (100.0%)
Food & Live Animals	79.8 (9.6%)	292.6 (8.2%)
Other Crude Materials	108.8 (13.0%)	226.3 (6.3%)
Manufactured Goods	646.6 (77.4%)	3,069.6 (85.5%)
Textiles	84.9 (10.2%)	461.3 (12.9%)
Clothing	213.6 (25.6%)	697.7 (19.4%)
Wigs	100.9 (12.1%)	327.0 (9.1%)
Footwear	17.3 (2.0%)	121.5 (3.4%)
Plywood	91.8 (11.0%)	159.0 (4.4%)
Ceramics	0.9 (0.1%)	33.9 (1.5%)
Toys & Plastic Goods	12.5 (1.5%)	108.9 (3.0%)
Steel Plates	7.6 (0.9%)	69.2 (1.9%)
Other Steel Products	5.8 (0.7%)	14.0 (0.4%)
Metal Products	12.2 (1.5%)	56.4 (1.6%)
Electrical Products	35.9 (4.3%)	452.0 (12.6%)
Electrical Machinery	8.0 (1.0%)	102.4 (2.9%)
Machinery	8.4 (1.0%)	67.8 (1.9%)
Ships	2.5 (0.3%)	100.0 (2.8%)
Precision Instruments	3.5 (0.4%)	35.1 (1.0%)
Mics. Manufactures	40.8 (4.9%)	263.4 (7.3%)
Actual Exports		
Commodity	Target Year (1976)	
All Commodities	7,715.1 (100.0%)	
Foods & Live Animals	586.6 (7.6%)	
Other Crude Materials	341.4 (4.4%)	
Manufactured Goods	6,787.1 (88.0%)	
Textiles	954.4 (12.4%)	
Clothing	1,845.5 (23.9%)	
Wigs	69.5 (0.9%)	
Footwear	398.5 (5.2%)	
Plywood	337.1 (4.4%)	
Cement	109.9 (1.4%)	
Handbags & Travel Goods	143.0 (1.9%)	
Steel Plates	158.2 (2.1%)	
Other Steel Products	210.6 (2.7%)	
Metal Products	227.4 (3.0%)	
Electronics Products	776.6 (9.9%)	
Electrical Machinery	145.9 (1.9%)	
Machinery	129.2 (1.7%)	
Ships	278.2 (3.6%)	
Precision Instruments	137.3 (1.8%)	
Mics. Manufactures	875.8 (12.9%)	

* Source: Third FYEDP (1972-1976) and The Bank of KOREA, Economic Statistics Yearbook.

Table 3-5. Export Plan and Actual Performance (Fourth FYEDP)

Million US Dollars		
Export Plan		
Commodity	Base Year (1975)	Target Year (1981)
All Commodities	5,081 (100.0%)	14,165 (100.0%)
Primary Products & Foods	770 (15.1%)	1,130 (8.0%)
Light Manufactures	2,819 (55.5%)	6,520 (46.0%)
Textiles & Clothing	1,817 (35.8%)	3,740 (26.4%)
Foodwear	191 (3.8%)	650 (4.6%)
Wood Products	243 (4.8%)	500 (3.5%)
Others	568 (11.1%)	1,630 (11.5%)
Heavy & Chemical Products	1,492 (29.4%)	6,515 (46.0%)
Steel & Metal	367 (7.2%)	1,040 (7.3%)
Machinery	289 (5.7%)	1,415 (10.0%)
Electronics	409 (8.0%)	1,940 (13.7%)
Ships	138 (2.7%)	910 (6.4%)
Petrochemicals	188 (3.8%)	930 (6.6%)
Others	101 (2.0%)	280 (2.0%)
Actual Exports		
Commodity	Target Year (1981)	
All Commodities	21,253.8 (100.0%)	
Primary Industry Product	1,843.4 (8.7%)	
Light Industry Product	9,927.3 (46.7%)	
Textile	6,367.0 (30.0%)	
Footwear	1,024.1 (4.8%)	
Others	2,536.2 (11.9%)	
Heavy & Chemical	9,481.1 (44.6%)	
Petrochemical	682.1 (3.2%)	
Metal & Steel	3,037.4 (14.3%)	
General Machinery	485.9 (2.3%)	
Electronics	2,168.2 (10.2%)	
Transport Equipment	2,057.8 (9.7%)	
Others	1,051.7 (4.9%)	

* Source : Fourth FYEDP (1977-1981), pp. 184-185,
Economic Planning Board, Korean Economic Indicators (1984.3)

exports was planned to increase from 29% in 1975 to 46% in 1981 assuming the same weight as the light manufacturing exports. During the Fourth Five-Year Plan the actual performance of the exports was 150% of the export plan. The composition is 8.7% primary industry products, 46.7% light industry products and 44.6% heavy and chemical products.²⁸

The export promotion measures adopted in Korea since the early sixties were concerned only with gross export volume and more or less ignored the value-added aspect of export earnings. As a result, the import content of Korea's exports shows no tendency to decline. Balassa argues that the main beneficiaries of the various export promotion measures are industries that rely heavily on imported raw materials, intermediate products and capital goods because such imports enjoy tariff exemptions and wastage allowances as well as financing at preferential rates.²⁹

The share of imports which are used as intermediate inputs in export promotion increased steadily from about 14% to total commodity imports in 1966 to about 33% in 1976. Their import value was equivalent to around 40% of the total value of commodity exports during 1966-77. This implies that the apparent domestic value-added content of exports was less than 60%, although the actual direct import content of exports might have been over estimated due to the official wastage allowances which leaked out large amounts of duty-free imported raw materials to the domestic market.

From 1961 till 1983, including the First, Second, Third, and Fourth Five-Year Economic Development Plans, economic growth in Korea has proceeded rapidly, with overall increase in GNP from 40.9 U.S. million dollars to 24,445.1 U.S. million dollars. The GNP stood at over 100 U.S. million dollars in 1964, over 1,000 U.S. million dollars in 1971, over 10,000 U.S. million dollars in 1977, and over 20,000 U.S. million dollars in 1981.

Regression analysis was applied in this study to test the relationship between exports and economic growth in Korea, using stepwise procedure.³⁰

According to the stepwise procedure for building a polynomial regression model to describe $\mu_{Y|X}$ as a function of X , (1) fit the model $y_i = \beta_0 + \beta_1 x_i + \epsilon_i$, test $H_{01}; \beta_1 = 0$ vs $H_{a1}; \beta_1 \neq 0$, (2) fit the model $y_i = \beta_0 + \beta_1 x_i + \beta_2 x_i^2 + \epsilon_i$, test $H_{02}; \beta_2 = 0$ vs $H_{a2}; \beta_2 \neq 0$. In the test results, H_{01} and H_{02} were rejected because $\text{PROB} > |T|$ for H_{01} was 0.0001 and the $\text{PROB} > |T|$ for H_{02} was 0.0001. The next step in the analysis was to (3) fit the model $y_i = \beta_0 + \beta_1 x_i + \beta_2 x_i^2 + \beta_3 x_i^3 + \epsilon_i$, test $H_{03}; \beta_3 = 0$ vs $H_{a3}; \beta_3 \neq 0$. In the computer output, H_{02} was fail to rejected but H_{03} was rejected because the $\text{PROB} > |T|$ for H_{03} was 0.0282. So the analysis was continued by (4) fitting the model $y_i = \beta_0 + \beta_1 x_i + \beta_2 x_i^2 + \beta_3 x_i^3 + \beta_4 x_i^4 + \epsilon_i$, test $H_{04}; \beta_4 = 0$ vs $H_{a4}; \beta_4 \neq 0$.

The results obtained were the $\text{PROB} > |T|$ for H_{03} was 0.2069 and the $\text{PROB} > |T|$ for H_{04} was 0.3303. I failed to reject H_{03} and H_{04} at the 5% confidence level. Thus it was concluded that $y_i = \beta_0 + \beta_1 x_i + \beta_2 x_i^2 + \epsilon_i$.

Results of the stepwise regression procedure are shown by the computer output for SAS from p.35 to p.42. By the stepwise procedure for building a polynomial regression, the model for the relationship between export and growth in Korea was;

$$Y = 2,540.859 + 4.30679X - 0.0000539329X^2$$

$$(748.605) (0.244085) (0.00001109058)$$

Where Y is GNP, X is exports and R square of this model was 0.9919. The residuals from fitting a model are very important in showing how adequately the model describes the data. The residuals are the parts of the observations which cannot be explained by the fitted regression surface.

In the examination of residuals, there are no unsatisfactory residuals behavior. The confidence interval is about the mean of the distribution at $X=X_a$. The question to be answered is where would one expect the Y value to occur from an experimental unit with X value equal to X_a . We want a prediction interval, i.e., an interval which has a specified probability $1-\alpha$ of containing the value of a future observation at $X=X_a$.

In computer analysis, the 95% confidence interval and 95% prediction interval were used as specified probability level. The graph of quadratic regression says that only one year actual export is outside the 95% prediction interval.

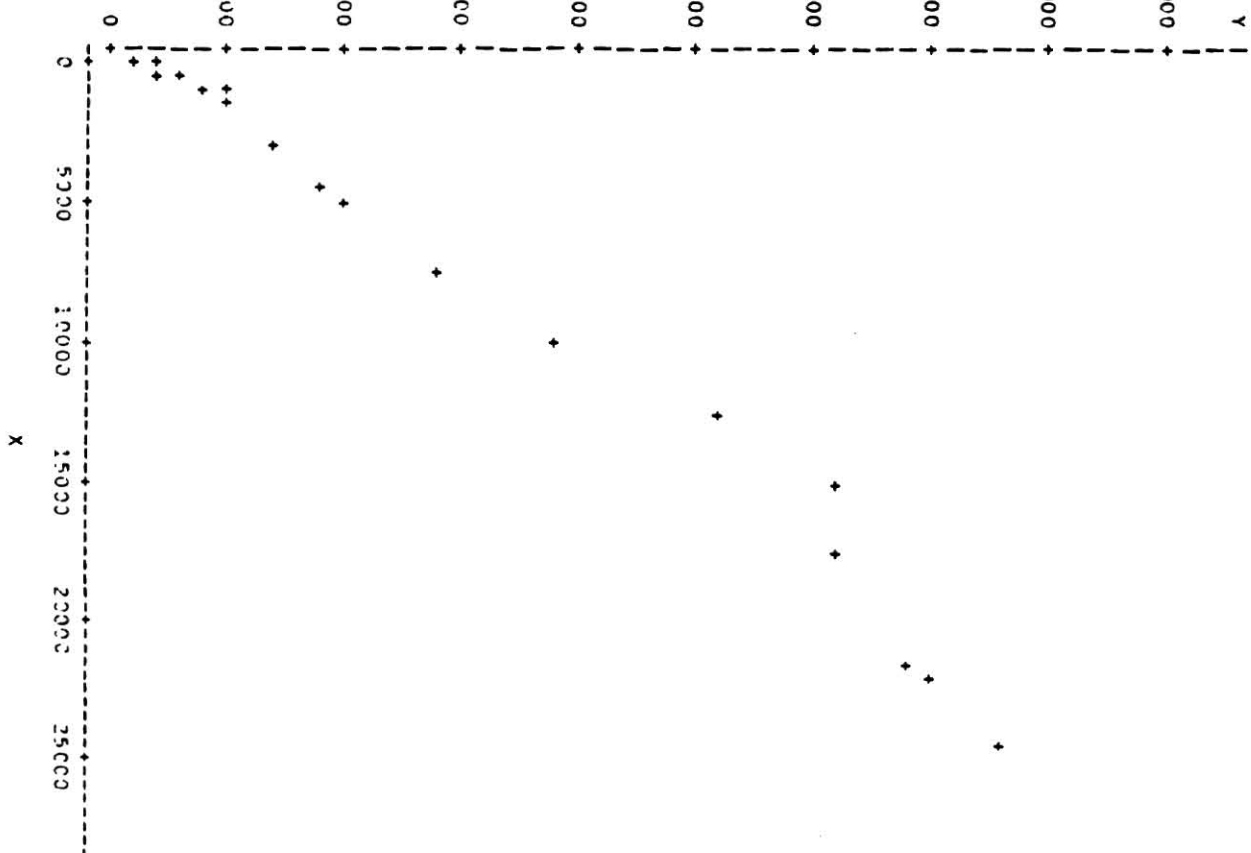
From the above analysis, one may conclude that a strong quadratic regression relationship existed between exports and economic growth in Korea from 1961 to 1983. Although not undertaken in this study, further statistical analysis of this relationship and its causes might be quite fruitful.

THE ANNUAL EXPORTS AND GNP IN KCPFA
10:56 THURSDAY, JULY 26, 1984

THE ANNUAL EXPORTS AND GNP IN KCPFA
10:56 THURSDAY, JULY 26, 1984

OBS	YEAR	EXPORTS	GNP	PAID	X	X2
1	1961	4C.9	2103	0.019448	40.9	1673
2	1962	54.8	2315	0.023672	54.8	3003
3	1963	86.8	2718	0.031935	86.8	7534
4	1964	119.1	2876	0.041412	119.1	14185
5	1965	175.1	3006	0.058250	175.1	30660
6	1966	250.3	3671	0.068183	250.3	62650
7	1967	320.2	4274	0.074918	320.2	102528
8	1968	455.4	5226	0.087141	455.4	207389
9	1969	622.5	6625	0.093962	622.5	387506
10	1970	835.2	7586	0.104583	835.2	697559
11	1971	1067.4	9367	0.113953	1067.4	1139342
12	1972	1624.7	13573	0.153608	1624.7	2637701
13	1973	3225.7	13504	0.238818	3225.7	10400625
14	1974	4460.4	18549	0.240466	4460.4	19895158
15	1975	5081.0	20852	0.243673	5081.0	25816561
16	1976	7715.1	28680	0.269006	7715.1	59522768
17	1977	10046.5	37429	0.268415	10046.5	100932162
18	1978	12710.6	51960	0.244623	12710.6	161555352
19	1979	15055.5	62374	0.241375	15055.5	226668080
20	1980	17504.9	61203	0.296014	17504.9	306421524
21	1981	21252.8	67191	0.316319	21253.8	451724014
22	1982	21853.4	70797	0.309677	21853.4	477571092
23	1983	24445.1	75108	0.325466	24445.1	597562514

PLOT OF Y*X SYMBOL USED IS +



THE ANNUAL EXPORTS AND GNP IN KOREA
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THE ANNUAL EXPORTS AND GNP IN KOREA
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DEP VARIABLE: Y

DEP VARIABLE: Y

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	1	14776253442	14776253442	1161.542	0.0001
ERROR	21	267145979	12721237		
C TOTAL	22	15043399422			
ROOT MSE		3566.684	R-SQUARE	0.9822	
DEP MEAN		24712.478	ADJ P-SQ	0.9814	
C.V.		14.43273			

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	2	14923990801	7460495441	1218.950	0.0001
ERROR	20	122408541	6120427		
C TOTAL	22	15043399422			
ROOT MSE		2473.950	R-SQUARE	0.9919	
DEP MEAN		24712.478	ADJ P-SQ	0.9910	
C.V.		10.01093			

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > T
INTERCEP	1	4229.039	956.199	4.423	0.0002
X	1	3.161807	0.092772	34.081	0.0001

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > T
INTERCEP	1	2540.859	748.605	3.354	0.0029
X	1	4.306790	0.244085	17.645	0.0001
X2	1	-0.000359229	0.0001109058	-4.863	0.0001

THE ANNUAL EXPORTS AND GNP IN KOREA
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THE ANNUAL EXPORTS AND GNP IN KOREA
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DEP VARIABLE: Y

DEP VARIABLE: Y

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	3	14949023053	4983007684	1003.187	0.0001
ERROR	19	54376369	4567177		
C TOTAL	22	15043399422			
ROOT MSE		2228.717	R-SQUARE	0.9937	
DEP MEAN		24712.478	ADJ P-SQ	0.9927	
C.V.		9.018588			

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	4	14953995183	3738498796	752.682	0.0001
ERROR	18	89404239	4966902		
C TOTAL	22	15043399422			
ROOT MSE		2223.655	R-SQUARE	0.9941	
DEP MEAN		24712.478	ADJ P-SQ	0.9927	
C.V.		9.018538			

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > T
INTERCEP	1	3275.103	741.850	4.415	0.0003
X	1	3.241313	0.499625	6.487	0.0001
X2	1	0.00067951644	0.0005705657	1.354	0.1795
X3	1	-3.90080E-09	1.64203E-09	-2.376	0.0282

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > T
INTERCEP	1	3592.096	806.654	4.453	0.0003
X	1	2.499257	0.894000	2.796	0.0119
X2	1	0.0002251772	0.0001827044	1.386	0.1828
X3	1	-1.60689E-08	1.22721E-08	-1.309	0.2069
X4	1	2.55715E-13	2.55578E-13	1.001	0.3303

THE ANNUAL EXPORTS AND GNP IN KOREA
10:56 THURSDAY, JULY 26, 1984

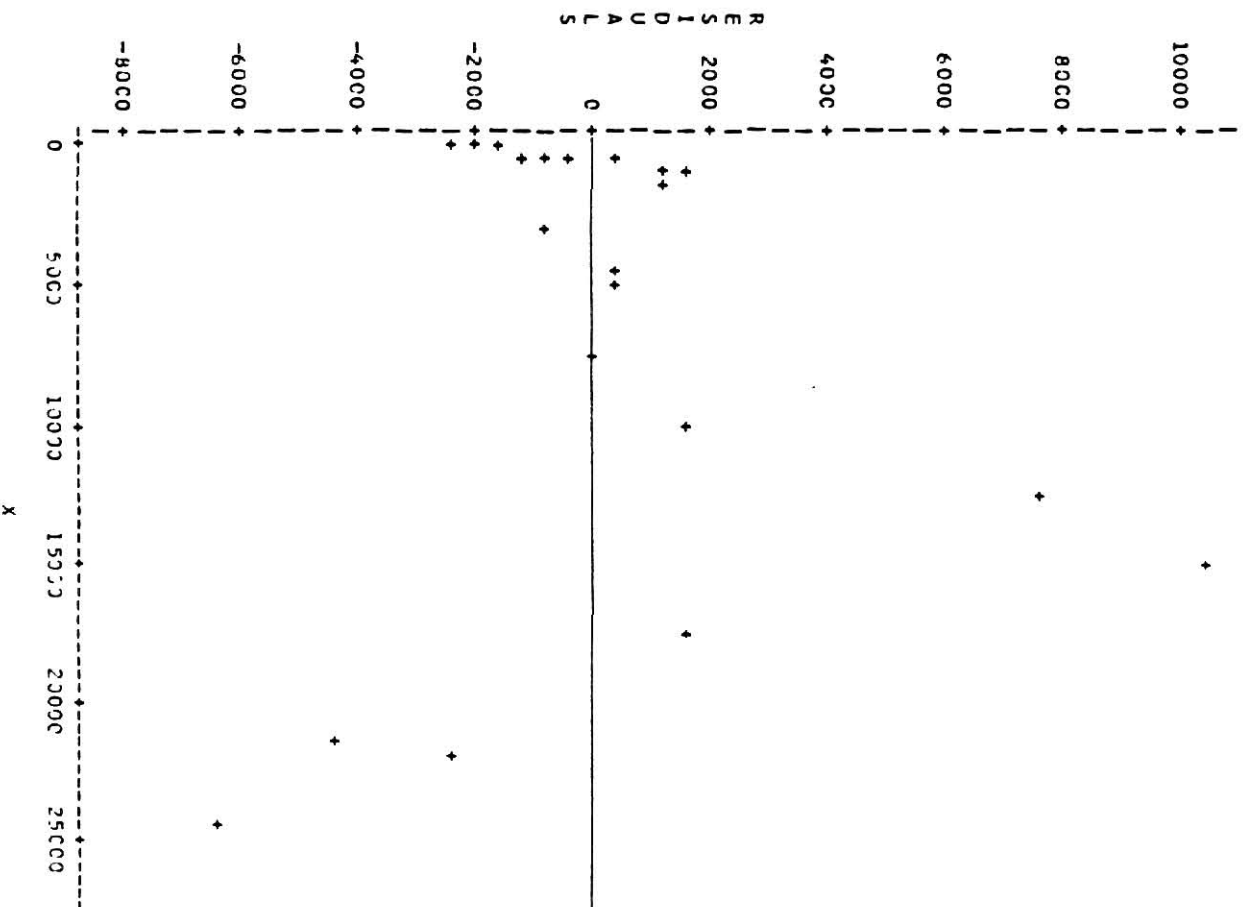
DEP VARIABLE: Y

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	5	15001256276	3000251255	1210.263	0.0001
ERROR	17	42143146	2479009		
C TOTAL	22	15043399422			
ROOT MSE		1574.487	P-SQUARE	3.9972	
DEP MEAN		24712.478	ADJ P-SQ	0.9964	
C.V.		6.371222			

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=C	PROB > T
INTERCEP	1	2405.138	631.398	3.809	0.0014
X	1	6.306466	1.076665	5.857	0.0001
X2	1	-0.00112766	0.0003415756	-3.301	0.0042
X3	1	1.48941E-07	3.87734E-08	3.841	0.0013
X4	1	-7.61371E-12	1.81253E-12	-4.201	0.0006
X5	1	1.30151E-16	2.98081E-17	4.366	0.0004

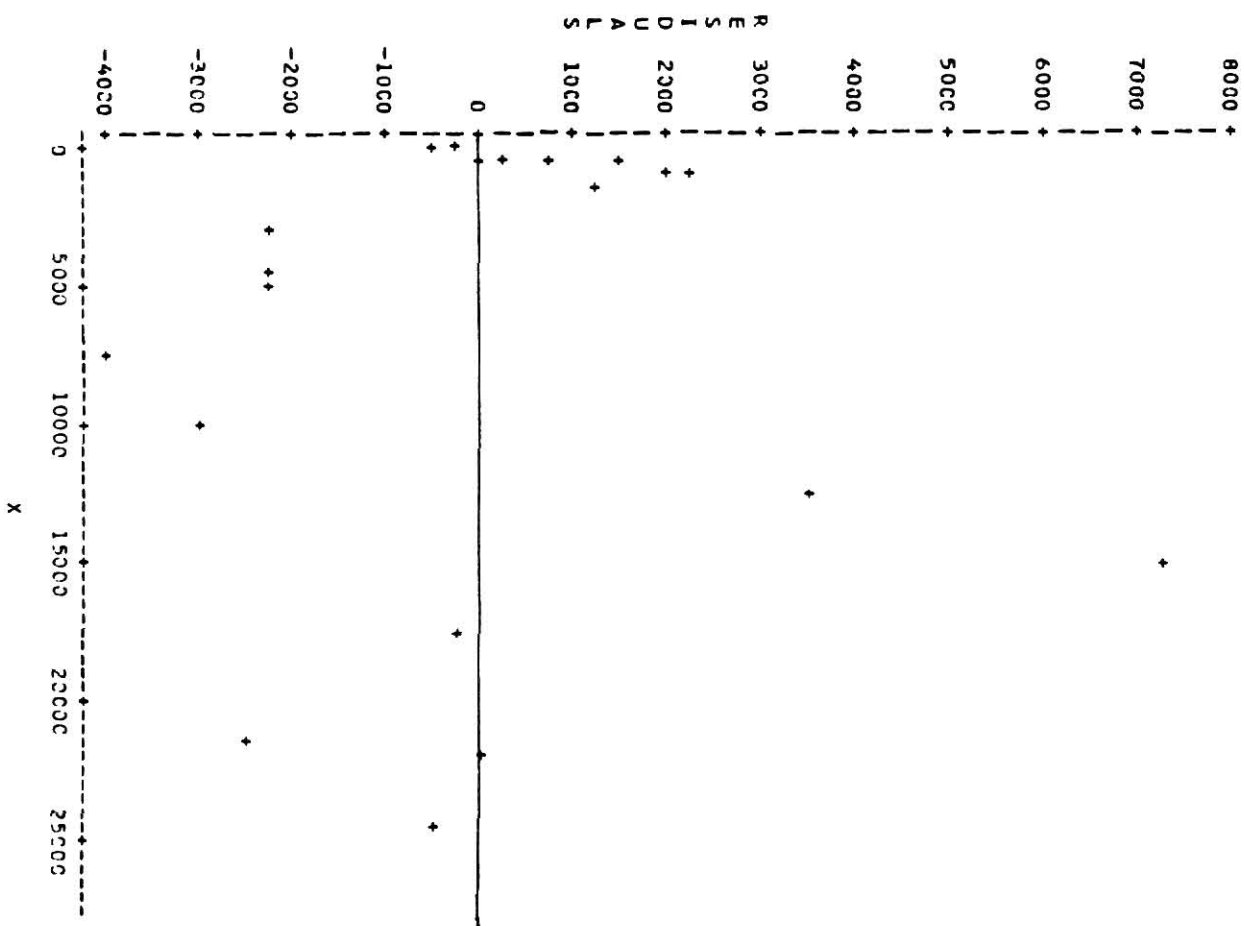
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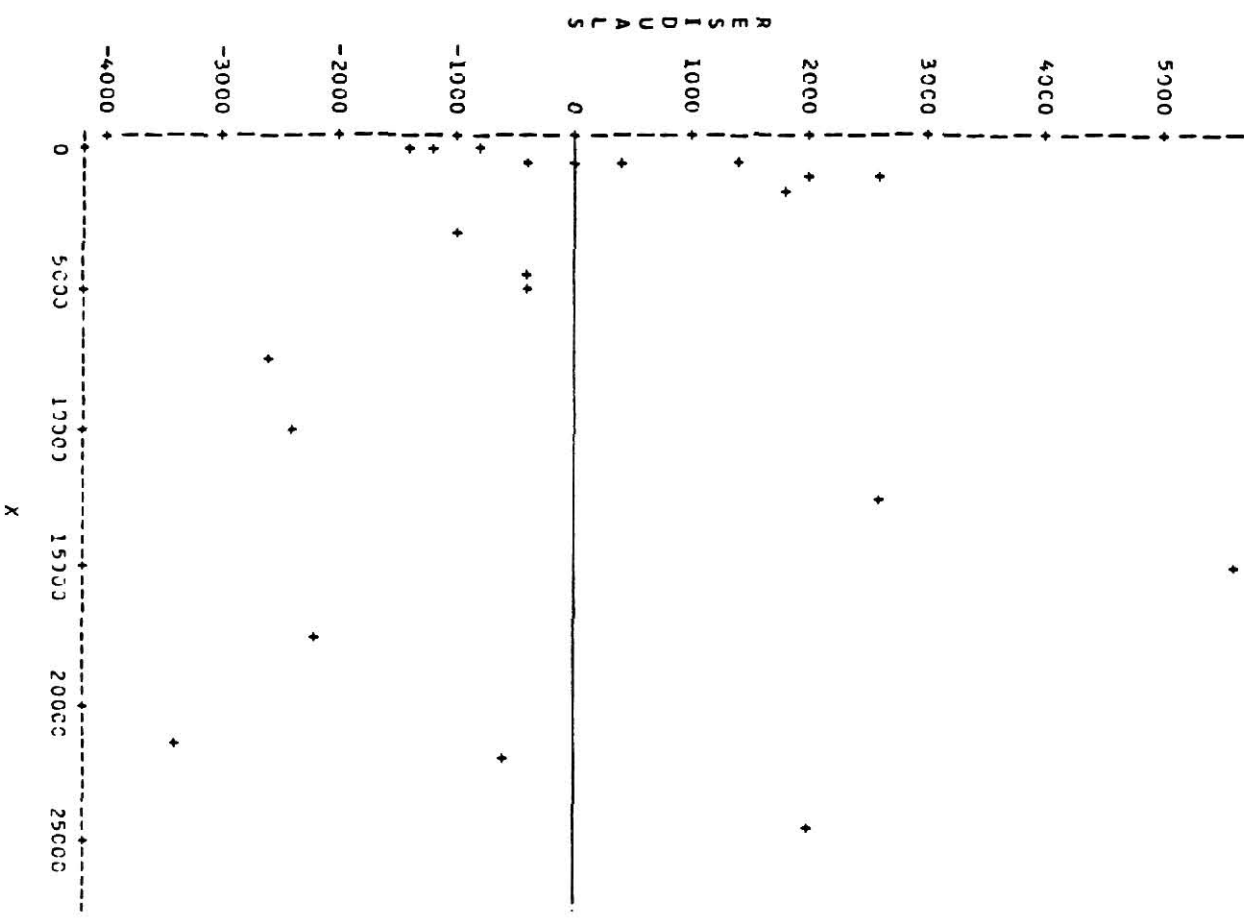
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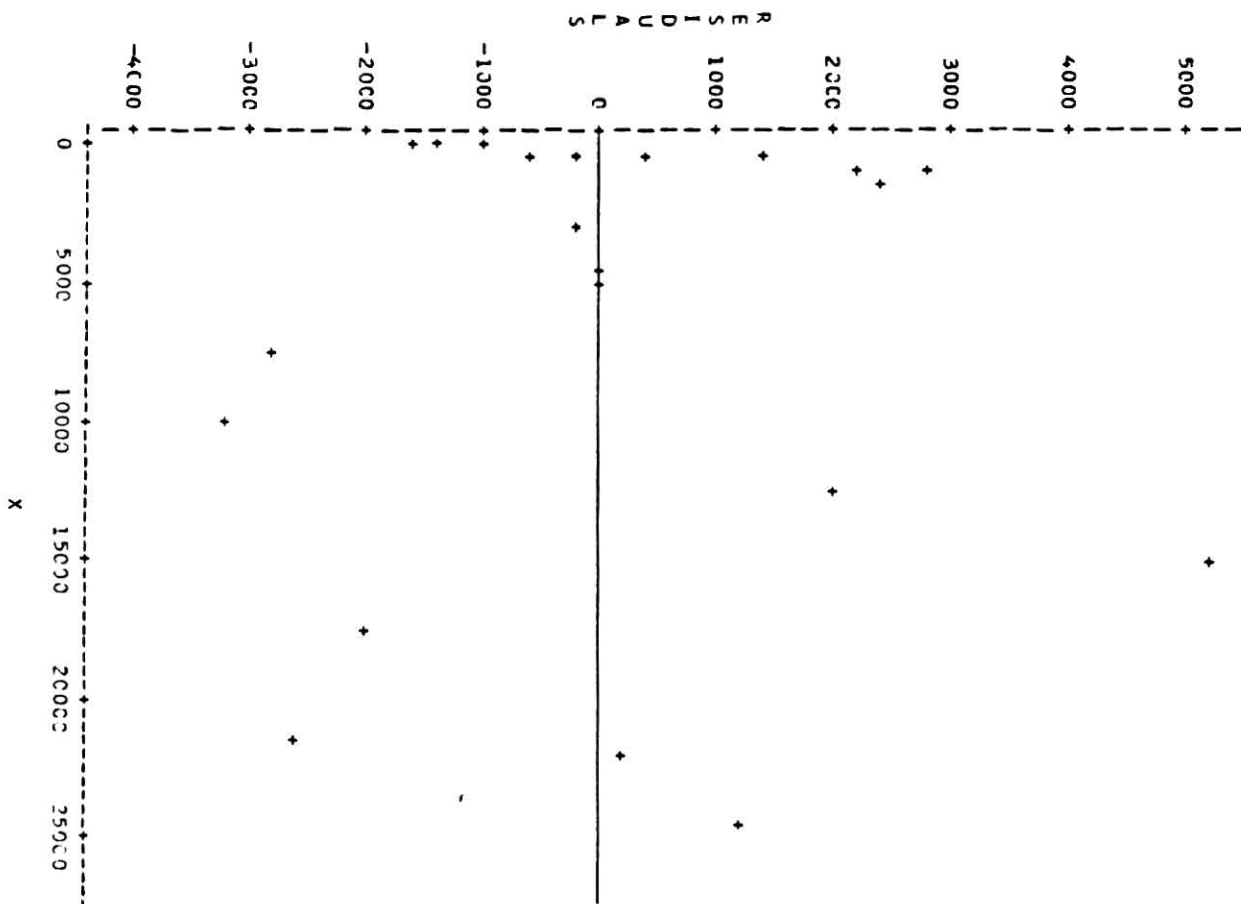
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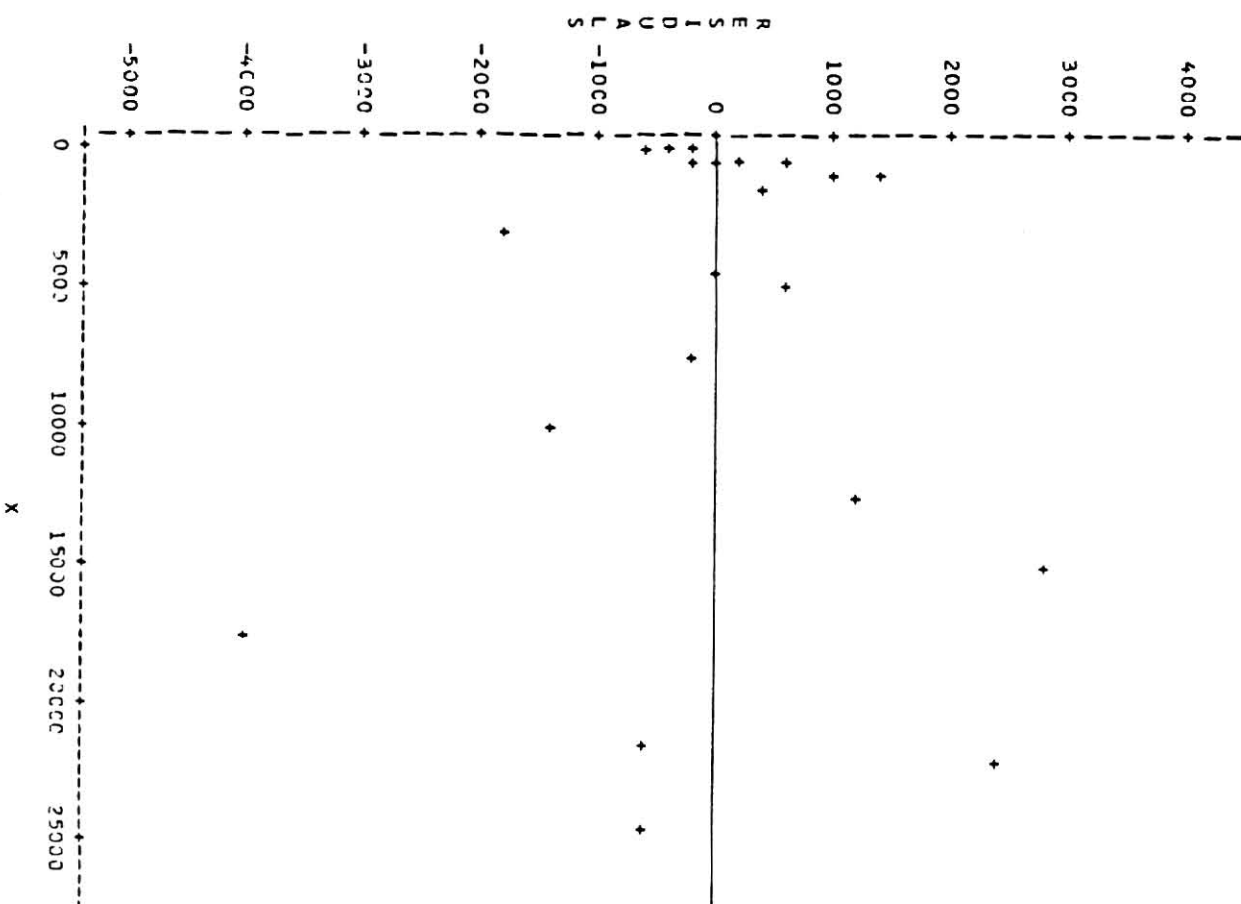
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PLOT OF R4*X SYMBOL USED IS +



THE ANNUAL EXPORTS AND GNP IN KCP EA
10:56 THURSDAY, JULY 26, 1984

PLOT OF R5*X SYMBOL USED IS +



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THE ANNUAL EXPORTS AND GNP IN KOREA
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MODEL CROSSPRODUCTS X*X X*Y Y*Y

DEP VARIABLE: Y

X*X	INTERCEP	X	X2	Y	SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
INTERCEP	23	149003.1	2443365992	568387	MODEL	2	1492099081	7460495441	1218.950	0.0001
X	149003.1	2443365992	4.72081E+13	8355592523	ERROR	20	122408541	6120427		
X2	2443365992	4.72081E+13	9.75494E+17	1.56912E+14	C TOTAL	22	15043399422			
Y	568387	8355592523	1.56912E+14	29089650803						

X*X INVERSE, B, SSE

ROOT MSE 2473.950
DEP MEAN 24712.478
C.V. 10.01093
R-SQUARE
ADJ R-SQ 0.9919
0.9910

INVERSE	INTERCEP	X	X2	Y
INTERCEP	0.09156372	-0.0006177378	6.29059E-10	2540.859
X	-0.000177278	9.73424E-09	-4.26650E-13	4.30679
X2	6.29059E-10	-4.26650E-13	2.00968E-17	-0.0000539329
Y	2540.859	4.30679	-0.0000539329	122408541

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H0: PARAMETER=0	PRCB > T
INTERCEP	1	2540.859	748.605	3.354	0.0029
X	1	4.306790	0.244085	17.645	0.0001
X2	1	-0.0000539329	0.0001109058	-4.863	0.0001

COVARIANCE OF ESTIMATES

COVB	INTERCEP	X	X2
INTERCEP	560409.1	-108.563	0.003850112
X	-108.563	0.05957771	-0.000026113
X2	0.003850112	-0.000026113	1.23001E-10

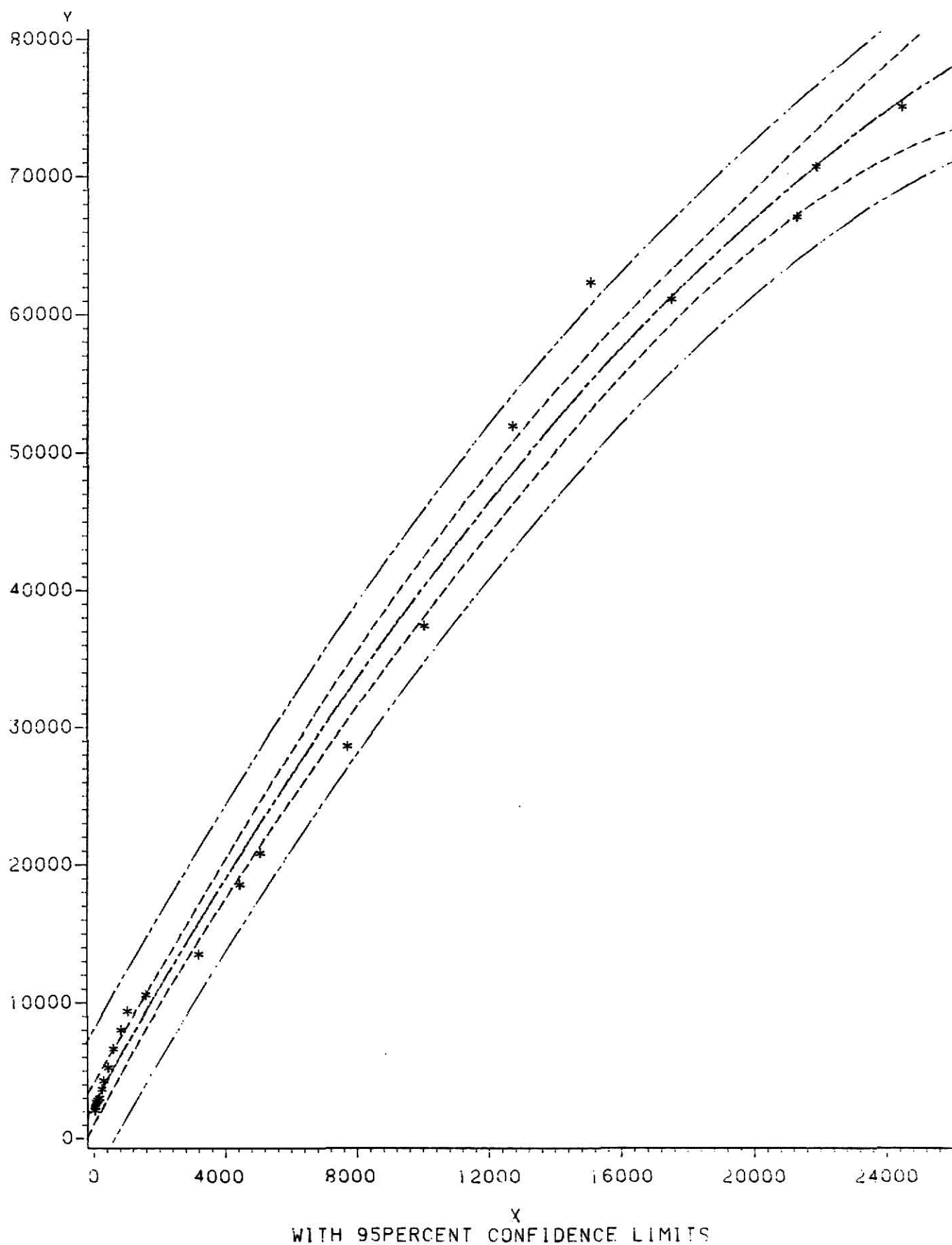
THE ANNUAL EXPORTS AND GNP IN KOREA
10:56 THURSDAY, JULY 26, 1984

OBS	ACTUAL	PREDICT VALUE	STD ERR PREDICT	LOWER95% MEAN	UPPER95% MEAN	LOWER95% PREDICT	UPPER95% PREDICT	RESIDUAL	STD ERR RESIDUAL	STUDENT RESIDUAL	-2-1-0 1 2
1	2103	2717	742.725	1169	4266	-2671	8165	-613.917	2360	-0.263	
2	2315	2777	740.751	1232	4322	-2610	8164	-461.710	2360	-0.196	
3	2718	2914	736.251	1379	4450	-2470	8298	-196.282	2362	-0.083	
4	2876	3053	731.775	1527	4579	-2329	8435	-177.033	2363	-0.075	
5	3006	3293	724.172	1783	4804	-2084	8670	-287.325	2366	-0.121	
6	3671	3615	714.280	2126	5105	-1756	8987	55.537	2369	0.023	
7	4274	3914	705.417	2443	5386	-1452	9281	355.636	2371	0.152	
8	5226	4491	689.159	3053	5929	-866.049	9848	735.013	2376	0.339	
9	6625	5201	670.878	3802	6600	-145.969	10548	1424	2381	0.598	
10	7986	6100	650.395	4744	7457	764.386	11436	1886	2387	0.790	
11	9367	7376	631.751	5759	8394	1750	12402	2291	2392	0.958	
12	10573	9393	603.089	8135	10651	4062	14705	1180	2399	0.492	
13	13504	15869	630.905	14553	17185	10544	21195	-2365	2392	-0.989	
14	18549	20678	718.109	19180	22176	15304	26051	-2129	2367	-0.899	
15	20852	23031	768.761	21428	24635	17627	28435	-2179	2351	-0.927	
16	28680	32558	962.959	30549	34567	27020	38096	-3878	2279	-1.702	
17	37429	40365	1062	38151	42580	34750	45981	-2936	2235	-1.314	
18	51960	48569	1075	46327	50812	42942	54196	3391	2228	1.522	
19	62374	55157	1019	53031	57282	45576	60738	7217	2254	3.201	
20	61203	61405	954.428	59414	63395	55873	66936	-201.584	2282	-0.088	
21	67191	69714	1138	67340	72087	64034	75394	-2523	2197	-1.148	
22	70797	70932	1222	68352	73451	65146	76658	-105.067	2151	-0.049	
23	75108	75592	1757	71927	79258	69262	81922	-484.466	1741	-0.278	

OBS	COOK'S D	OBS	COOK'S D
1	0.002	19	0.690
2	0.001	20	0.030
3	0.000	21	0.118
4	0.000	22	0.000
5	0.000	23	0.026
6	0.000		
7	0.001		
8	0.003		
9	0.009		
10	0.015		
11	0.021		
12	0.005		
13	0.023		
14	0.025		
15	0.031		
16	0.172		
17	0.130		
18	0.180		

SUM OF RESIDUALS	-2.72848E-11
SUM OF SQUARED RESIDUALS	122408541

THE ANNUAL EXPORTS AND GNP IN KOREA



4. The Major Productive Factors in Korea

Economist of the early post World War II period based their developmental models on the accumulation of physical capital within both neo-classical and Keynesian frameworks. Since then, however, economists have realized the importance of other productive factors in economic development, although physical capital accumulation is still considered a necessary condition for development. When other conditions are right, foreign savings can be borrowed for development. Conversely, when other conditions are not right, an abundance of capital does not mean much. High mobility of international capital appears to make the physical capital theory of development inadequate.

(1) Accumulation and Allocation of Physical Capital

The Korean experience indicates that the inflow of foreign savings played a dominant role in capital formation in the early years of industrialization. Table 3-6 exhibits some of the magnitude of capital formation resulting from the inflow of foreign savings. For instance, in 1961 the proportion of national savings of GNP amounted to only 2.8%, while that of foreign savings amounted to 8.6%. This situation was reversed by 1976; namely, national savings financed 23.9% and foreign savings 2.3 % of GNP.

It can be said that foreign savings played a role of "pump priming" to increase national income and then an accelerating proportion of the national income was siphoned off for capital formation as the economy was getting richer. This is a less painful process of capital formation than starting with severe "belt-tightening" without the inflow of foreign savings. In a dynamic sense, it can also be said that the national and foreign savings were complementary rather than competitive.

Table 3-6. National Savings and Foreign Savings

Year	National Savings *	Foreign Savings *	GNP **
1961	2.8%	8.6%	2,103
1966	11.8%	8.5%	3,671
1971	14.6%	10.5%	9,367
1976	23.9%	2.3%	28,680
1981	21.7%	7.7%	67,191

* % of GNP

** in Million U.S. Dollars

Source; Korean Economic Indicators, Economic Planning Board, Korea, 1984.3.

It is well known that grants-in-aid constituted a major portion of the foreign savings in the 1950's and early 1960's. However, by 1965, such aid was terminated and replaced by public and private loans. The massive inflow of private loans appears to attest to the strength of the Korean economy, even though there were some individual cases of insolvency. The ultimate test of credit worthiness lies in the productivity or earning power of capital investment, whether it pertains to a nation, a corporation or an individual.

Korea has differed from many LDCs by relying on foreign trade to help stimulate economic development, a policy known as export-led growth. The first column of Table 3-7 shows that the increase in the Capital-Labor (K/L) ratio for the Korean economy was about 115% between 1966 and 1975. Note that the overall capital labor ratio differs in the two sectors, manufacturing and agriculture, as one might expect.

Table 3-7. K/L Ratios in Thousand Dollars per Laborer

Year	Overall K/L	Wage Index	K/L in Manuf.	K/L In Agri.	K/L in Exports	Total Exports *
1966	0.7	100	1.8	0.3	1.0	250
1975	1.5	183	3.0	0.7	3.1	5,081

* In million U.S. Dollars

Source; Wontack Hong, Trade, Distortions and Employment Growth in Korea, 1979, Korea Development Institute

The second column shows that wage rates have increased substantially; in fact, wages have risen relative to interest and rents. As a result, capital has been substituted for labor in both sectors, as revealed in the third and fourth columns. The fact that the fifth column resembles the third much more closely than the fourth is indicative of the relative importance of manufactured goods in exports. Indeed Korean exports have shifted from mainly ores and other raw materials to largely manufactured goods such as textiles, shoes, steel and electronics. Korea still exports both primary products and manufactured goods but the latter has accounted for most of the increase in exports.

(2) Accumulation and Allocation of Human Resources

Broadly speaking, the human resources of an economy can be divided into two categories; unskilled labor and skilled labor. Skilled labor may include diverse skills such as technology-related skills and managerial skills. The measurement of unskilled labor poses less of a problem than that of skilled labor. Although Koreans are known to value highly the attainment of education, in 1944

only 0.3% of the total population had 13 years or more education and 86.6% had no education at all. By 1974, however, the proportion with no education dropped to 20.3% and 5.7% of the total population had 13 years or more of education.

Table 3-8 shows this fact. Such a drastic change is partly due to the compulsory education system implemented since Korea's independence and the society's willingness to pay for it.

Table 3-8. Educational Attainment and SMRR^{**} on Investment in Education

Years	0	1-6	7-9	10-12	13 over
1944	86.6 [*]	11.3	-	1.8	0.3
1960	43.7	36.0	9.6	7.6	2.6
1974	20.3	36.0	20.8	17.2	5.7
	Levels of schooling		SMRR ^{**}		
	middle school		8.2%		
	high school		14.6%		
	college		9.3%		

* % of population

** Social Marginal Rates of Return on Investment in Education (1971)

Source; Chang-young Jung, "Human resources in Korean economic development"
1977, Honolulu, Hawaii

Returns to educational investment are manifested, although perhaps imperfectly, in the higher earnings of employees with higher education. Dr. Jung's findings shows that college graduates receive approximately three times higher salaries than primary school graduates, and that high school graduates

receive two times higher salaries than primary school graduates.³¹ A more interesting finding in his study is reflected in the social marginal rates of return on investment in education. The rates of return for middle school, high school and college education in 1971 were 8.2%, 14.6% and 9.3%, respectively. These figures are significantly lower than the observed rate of return on investment in physical capital in Korea, suggesting a relative abundance of human capital. This finding is noteworthy in the sense that a higher productivity of physical capital can be explained by considering the relative high level of education of the labor force.

On the job training is recognized as another significant element in human capital formation, perhaps as important as formal education or school learning itself. However, the lack of appropriate information prevents making an estimation of its importance in Korean industrialization. One notable example is military training which had provided good opportunities for learning by seeing and learning by doing. The maintenance of a standing military force of 600,000 means that a well-disciplined work force of 200,000 is produced every year assuming a three-year military service requirement.

Another essential human agent in economic development is the entrepreneur. Entrepreneurs are the ones who gather information, organize input resources for efficient uses and take risks. Their creativeness is one of the crucial determinants of the speed of industrialization. However, there is little information which explains the source of entrepreneurs in Korea. Admittedly, there is not a well accepted general theory of entrepreneurship in economic science. Perhaps a Korean case study could shed some insight into the general theoretical issues. This is an area for which not only economists but also other social scientists could productively devote effort in the future.

(3) Change in "Non-Economic Factors"

Economists recognize that economic analysis alone cannot provide a full explanation of the industrialization process and socio-cultural "preconditions" which must be met for the "take-off" stage to begin. One can observe in Korea a number of socio-cultural conditions that are conducive to rapid industrialization, although economists are unable to explain the fundamental causes of such changes. For that, one must rely on sociologists, political scientists, psychologists, and other social scientists.

The first of the social conditions has to do with the almost total absence of strong vested interests before the rapid industrialization which began during 1960's. Often in other LDCs rigidly structured vested interests tend to block social changes necessary for industrialization. The Korean case may be explained by the particular historical circumstances. For instance, the Japanese occupation of Korea did away with the royal family and Yangban system based on Confucianism.

A second question is what explains the readiness of the Korean people to accept abrupt social changes and socio-economic institutional reforms? It is not difficult to enumerate examples of major institutional reforms of the land-ownership system, of the tax system, of the monetary system, of the family system, of the education system, of the legal system and of the decision-making system, just to name a few.

Third, in the past, several authors branded Korean people as lazy or lackadaisical. But today Koreans have a reputation for being among the hardest working and most aggressive people in the world. The habit of hard work may come from social recognition of achievement as well as material rewards. Today in Korea the social recognition takes the form of presidential awards to those

who fulfil production and export targets and to those who exhibit in any field innovative achievement deemed exemplary to others.

Fourth, it has been proven that Koreans learn rapidly. Following the analysis of the motivational forces used by psychologists, economists attempt to conceptualize the issue of learning from the viewpoint of "intellectual capital accumulation". At this moment, a generally accepted method of its measurement does not exist. However, at the level of abstract conceptualization, it is recognized that the development and industrial application of scientific information and know-how requires "savings and investment" activities. In other words, real resource costs are involved in the accumulation of intellectual capital just as in physical capital and human capital formation. Learning is a cumulative process, especially in industrial technology and must be treated as a form of capital.

CHAPTER IV

THE PROBLEM OF ECONOMIC GROWTH IN KOREA

1. A Brief History of Growth in Korea Since 1961.

As can be seen in Table 4-1, during the 20 years from 1962 to 1981, the Korean economy expanded nearly 13-fold in real terms. During the same period, population increased by approximately 1.46 times. So the per capita GNP in 1981 compared to 1962 increased by about 8.8 times.

Table 4-1. Average Annual Growth Rates of Real Output and per capita GNP

	GNP**	per capita GNP**
First FYEDP* (1962-66)	7.88%	5.04%
Second FYEDP(1967-71)	9.62%	7.20%
Third FYEDP(1972-76)	9.70%	7.82%
Fourth FYEDP(1977-81)	5.98%	4.38%
1981 compared to 1962	12.87 times	8.83 times

* Five-Year Economic Development Plan

** At 1980 price

Source; Korean Economic Indicators, EPB of Korea, 1984.3

Table 4-2 and 4-3 provide some explanation for achievement of external equilibrium. Commodity exports as a whole rose by more than 380 times.

To put it another way; whereas exports grew by nearly 50% each year, the average annual import growth was less than 30%, which itself is by no means a

small growth. It is also obvious from Table 4-2 that the export expansion came about mainly from a rapid rise in exports of light industrial goods.

Table 4-2. Composition of Commodity Exports

	1962	1981
Total exports	55 [*] (100.0%)	21,254 [*] (100.0%)
Primary exports	40 (73.0%)	1,843 (8.7%)
Light industrial goods	14 (24.9%)	9,927 (46.7%)
Machinery and others	1 (2.1%)	9,484 (44.6%)

* In million U.S. Dollars

Source; Korean Economic Indicators, EPB of Korea, 1984.

Table 4-3. Composition of Commodity Imports

	1962	1981
Total	422 ^{**} (100.0%)	26,131 ^{**} (100.0%)
Capital goods	20 (16.5%)	6,158 (23.6%)
RM [*] for exports	---	4,587 (17.6%)
RM for domestic uses	324 (76.7%)	5,257 (20.1%)
Petroleum and Others	28 (6.7%)	10,129 (38.7%)

* Raw Materials

** In million U.S. Dollars

Source; Korean Economic Indicators, EPB of Korea, 1984.

Table 4-3 raises a curious problem, for there is no separate category for the imports of consumer goods. Indeed it was the policy of the Government to restrict the imports of almost all consumer goods; and to a great extent it was successful. It is also noteworthy that imports of raw materials for domestic uses are less than 20% of the total imports.

Finally, one of the most consistent features of the Korean economy during its history of rapid expansion is its chronic inflation. As Table 4-4 shows, during the entire period of growth Korea never managed to arrest its high inflation. During 1973, there was exceptional stability. This was due among other things to the successful management of the total money supply and credit creation (meaning domestic loans). The success of the monetary management in that year depended on one exceptional circumstance. During August 1972 the Korean Government foreclosed on corporate liabilities owed to curb market lenders which were then reported to be approximately 26% of the total domestic credit.

Other than the exceptional year of 1973, the annual rate of inflation in Korea has always been at double-digit levels through the period of expansion. This has bred an inflationary psychology and expectation in public thinking, and, as discussed later, has induced significant distortion in resource allocation. The most pernicious of them all is the fact that inflationary expectation perpetuates inflation by teaching the public and corporations how to profit from inflation.

Table 4-4. All Cities Consumer Price Index and Its Changes

Year	CPI	Increase Rate(%)
1967	15.4	10.9
1968	17.0	10.8
1969	19.1	12.3
1970	22.2	15.9
1971	25.2	13.5
1972	28.1	11.7
1973	29.0	3.5
1974	36.1	24.3
1975	45.2	25.3
1976	52.1	15.3
1977	57.4	10.1
1978	65.7	14.4
1979	77.7	18.3
1980	100.0	28.7
1981	121.3	21.3
1982	130.1	7.2

Source; Korean Economy Indicators, EPB of Korea, 1984.3.

2. The Problem of Economic Growth

(1) Nature of the Problem

Korea, at the beginning of the 1960's, started out with three major problems to solve: the low standard of living and traditional stagnation; extremely precarious balance of payment conditions; and finally the sustained high rate of inflation. In the following 20 years, she managed to solve the first two problems rather brilliantly. However, she has had a miserable record in solving the third problem, inflation. In fact, the strategy within which the first two problems were resolved may have included an in-built bias against the solution of inflation.

When an economy expands very fast, one would be justified in being concerned about over-heating of the economy. When real growth is accompanied by such enormous expansion of imports and exports in the same period, it would be unnatural if one does not worry about ensuing excessive dependence on foreign economies. On top of that, when the process brought with it continuously high inflation, then it does not take a professional economist to understand that inflation has been caused by excess demand and instability originating in the foreign sector.

(2) Excessive Dependence on the Foreign Sector.

Only two points will be raised in this section. The first is that there are roughly three different prototypes of countries depending on how they interact with the foreign sector. The first of these includes those countries endowed with natural resources or primary products which they can export and rely mainly on the export proceeds from these goods to finance their economic growth. Not all

such countries have succeeded in achieving growth; OPEC countries are the lucky ones, whereas jute-producing Bangladesh is not so fortunate, for example. The second prototype includes countries like India and the majority of communist block countries which place more emphasis on import substitution for the purpose of creating a self-sufficient economy within the shortest possible period of time. For various reasons, which are not discussed in detail here, these countries tended to end up with a high unused capacity of capital-intensive industries together with low generation of employment and exports.

The third prototype includes those countries which place more emphasis on export promotion than on import substitution as the means of industrialization of the domestic economy. The problems of deficits in the balance of payments are resolved by raising both exports and imports but with exports growing faster than imports. No doubt there are numerous examples of countries which have this and succeeded in closing the balance of payment gap as well as inducing rapid growth of the domestic economy.

Korea is but one example among this group. At one extreme we have countries such as India with a gigantic potential domestic market and at the other extreme we have countries such as Singapore and Hong Kong with slim potential for large scale industrialization unless they aim at foreign markets. Although Korea has achieved spectacular success in following the strategy of prototype three, it should be noted that this is certainly not the only viable strategy for Korea, for she also has a vast potential domestic market to cultivate with a population of nearly 40 million.

The second point for discussion in this section is that by numerical investigation of the foreign dependence of various countries one can detect how precarious the position Korea has taken.

Table 4-5. Foreign Dependence of Various Countries (1974)

Countries	Import/GDP	Export/GDP
USA	0.08	0.07
USSR	0.05	0.06
India	0.06	0.05
Japan	0.08	0.08
Germany	0.06	0.08
Singapore	1.62	1.12
Hong kong	1.01	0.89
Korea	0.53	0.38

Source; Computed from UN, Statistical Year Book. Ungsuh K. Park, Modern economic development in Republic of Korea, August 1978.

Table 4-5 summarize the extent to which various economies were relying on the foreign sector in 1971. In the case of Hong Kong and Singapore the ratios are greater than unity because the material purchases for re-export purposes are excluded from GDP. It is plainly obvious that Korea, whose size in many ways is closer to that of Japan and Germany, has a far higher dependence on the foreign sector than these countries.

(3) Excess Demand and Inflation

Numerous authors have analyzed the causes of inflation in Korea³². The most predominant of all causes is the sustained history of inflation itself which breeds the inflationary expectations. These are other causes, such as cost

elements arising from imported material prices, or grain prices. The most sustaining driving force has been the continuous threat of excess demand arising from the competition for goods and services between the domestic and the foreign sector. According to the various Five-Year Economic Plans compiled by the Economic Planning Board, the average rate of increase in exports which could be sustained by the targeted rate of a real growth of the domestic economy, the planned rate of increase in imports and the projected inflow of foreign investment resources, were 24% and 21% for the Third and Fourth Five-Year Plan periods, respectively. But it is well-known that during the Third Five-Year Plan period exports increased by an average of 48.8% per annum. During the Fourth Plan period the export targets were also overachieved by more than 30% average annual growth rate.

This is the source of excess demand for goods and services. It is understandable that various Korean Government agencies encourage the private economy to overachieve export targets when there is a severe gap in the international payment structure. But what is the logic for continuing this overachievement to the tune of twice the targets when we do not need any further accumulation of foreign resources? This could prove to be a naked case of Neo-Mercantilism where foreign currencies, rather than real goods and services, are regarded as national wealth.

The effects of such export related inflation are devastating. During the past 15 years, the consumer price index has risen nearly 10-fold while the exchange ratio moved from roughly 150 Won to 800 Won per U.S. dollar. The exchange ratio is therefore highly overvalued compared to purchasing power parity. The plain fact is that the much needed devaluation of Won currency has been prevented by the worry over the possible over-valuation of foreign debts

and the purely emotional resistance by political leaders and the public who confuse currency devaluation with loss of national prestige and as interpret it as admitting mismanagement of the economy.

Over-valuation of the currency discourages the development of domestic production of semi-processed materials because the imported materials are made arbitrarily cheap. To exacerbate the situation, imports of the materials for export purpose are allowed free of tariff, hence making exports even cheaper. In this way the exchange rate system becomes effectively a two tier system.

The export promotion policy sustaining this exchange rate gap takes its toll in discouraging expansion. On the other hand, export promotion has brought with it an excessive demand for goods and services and inflation. Through currency over-valuation and high domestic costs, Korea's international competitiveness has declined.

To boost the competitiveness, export subsidies have had increased. At the same time, export promotion in the form of tariff-free imports of materials and currency over-valuation effectively discouraged the domestic development of semi-processed materials. If this distortion of the market price mechanism is not corrected now, the economic structure will become more and more biased to final-touch assembly line production for foreign customers.

When an economy becomes sufficiently shallow and biased to final process only, the export-induced import requirement will rise almost as fast as the exports. Once this stage is reached, the vicious cycle of export promotion will be complete because excessive demand inflation, currency over-valuation, more promotion of exports with higher subsidies, rising need of exports due to higher import requirements and further shallowing of the economic structure will reinforce each other.

CHAPTER V

CONCLUSION

Korean economic planners have succeeded in creating rapid economic growth through the execution of very effective export promotion programs. The basic forces for development include the accumulation of physical capital, human capital and changes in cultural socio-economic elements. These factors have contained to push the productive capacity of the Korean economy upward with the aid of opportunities provided by the international market. The economy has demonstrated that human capital formation and socio-cultural-institutional changes are more crucial than physical capital accumulation in determining the speed of industrialization. When basic domestic conditions are favorable, foreign savings are rapidly mobilized and effectively used; if domestic conditions are unfavorable, trade opportunities in the international market do not mean much. Furthermore, it takes more time and effort for human capital formation than for physical capital formation. Hence, it can be concluded that human capital is more crucial in determining the speed of adjustment.

Korea is fortunate to have invested substantial resources in human capital formation well before the industrialization process began in the 1960's. It should also be noted that deducing the direct employment effects of trade and subsidy policies does not provide adequate basis for judging the overall efficacy of such policies. For instance, Korea's exports might have been less capital intensive if there had been no subsidy on capital use, but one might question whether Korea could have expanded so rapidly if it had strongly emphasized less capital-intensive production.

Throughout the period 1961-1983, the Korean Government pursued policies

to promote exports and foreign capital inflow, to control the rate of increase in imports, and to sustain high growth in GNP. As a result, the rapid expansion in commodity exports as well as the high growth rate of GNP were maintained. Although there was a substantial inflow of foreign capital, the overall balance of payment position of Korea steadily improved during 1962-1973 and after the temporary disruption caused by the oil crisis in 1974-1975, resumed such trend again in 1976.

With an average annual growth rate of 10%, Korea's GNP has nearly doubled every seven years since 1962. In regression analysis of the relationships between exports and GNP in Korea with a computer, findings indicate the relationship is to be quadratic rather than simple linear.

The costs of following the export-oriented growth strategy is by no means small. In order to insure a sustained and high economic growth, an export promotion strategy needs to be reviewed now. Unless a new strategy aimed at balancing the growth of the domestic and the external sectors is judiciously adopted, and unless a new strategy which can create rapid economic growth without excess demand and inflation is adopted, the economy could plunge into stagnation in the middle income range with high inflation, as many Latin American economies have experienced.

Looking ahead to Korea's future, one should recognize the crucial role of further improvements in human capital formation and intellectual formation. Limitations of international markets are readily seen for unskilled labor intensive goods, especially if other LDCs catch up with Korea, and if aggressive wholesale competition is launched. The rapidity with which human capital and intellectual capital are accumulated will ultimately determine the future growth of the Korean economy. Economic development is inevitably involved with

structural changes including the comparative advantages of an economy.

Korea's comparative advantage should change toward skilled-labor intensive goods or brain-power-intensive goods if the high growth rates recently achieved are to be maintained in the decades ahead.

The human resource is the only resource which Korea has in abundance and its improvement will be the mainstay of her strength. Others resource can be imported if needed. This has proved to be the case historically in Japan and some European countries as well as in Korea in recent years.

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TRADE AND ECONOMIC GROWTH IN THE REPUBLIC OF KOREA

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AN ABSTRACT OF A MASTER'S REPORT

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ABSTRACT

The Korean economy is growing rapidly. A phenomenal change in economic structure has accompanied the growth. The agriculture-oriented economy has been transformed into a semi-industrialized economy within a short period of 20 years. In shares of GNP, the primary sector declined from 39% (1961) to 14.5% (1982), while the secondary sector increased from 15.5% to 28.8% during the same period.

The question often raised among economists and layman is, "What explains the fast growth of the Korean economy?" How did the Korean economy overcome the adverse conditions created by the devastating Korean War and the lack of natural resources?

This report attempts to provide a tentative answer to such question. The analysis involves two basic forces operating upon the Korean economy, namely, impacts of international market forces and changes in the domestic capacity to produce.

Chapter II reviews the concepts of economic growth and economic development and briefly summarizes major hypotheses advanced since the end of World War II relating international trade to economic development.

Chapter III presents evidence to show that the leading sector of the Korean economy is export product. Relationships between export and growth in Korea from 1961 to 1983 are examined by computer analysis in Section 3 of Chapter III.

In chapter IV, examination is made of one of the most serious problems faced by the modern Korean economy.

The costs of following the export-oriented growth strategy is by no means

small. In order to insure a sustained and high economic growth, an export promotion strategy needs to be reviewed now. Unless a new strategy aimed at balancing the growth of the domestic and the external sectors is judiciously adopted, and unless a new strategy which can create rapid economic growth without excess demand and inflation is adopted, the economy could plunge into stagnation in the middle income range with high inflation, as many Latin American economies have experienced.

Looking ahead to Korea's future, one should recognize the crucial role of further improvements in human capital formation and intellectual formation. Limitations of international markets are readily seen for unskilled labor intensive goods, especially if other LDCs catch up with Korea, and if aggressive wholesale competition is launched. The rapidity with which human capital and intellectual capital are accumulated will ultimately determine the future growth of the Korean economy. Economic development is inevitably involved with structural changes including the comparative advantages of an economy.

Korea's comparative advantage should change toward skilled-labor intensive goods or brain-power-intensive goods if the high growth rates recently achieved are to be maintained in the decades ahead.