

SCIENCE & TECHNOLOGY AND THE KOREAN ECONOMY

Ministry of Science and Technology

Korean Economy in General

Since the early 1960's, when the First Five-Year Economic Development Plan was initiated, the Korean economy has achieved rapid growth through successful implementation of its five Economic Development Plans completed to date. Not only has the size of the economy expanded substantially but the economic structure has been modernized and improved. It has become a mature economy and now faces new challenges in order to reach the advanced stage.

In the early 1960's, emphasis was placed on import substitution for such key industries as cement, oil refining, and fertilizers, on the one hand, and social overhead capital including roads, railways, and electrification, on the other. Since the mid-1960's, Korea has put into effect a policy of export-oriented industrialization with the aim of increasing exports of labor-intensive light industrial products to

the world market. Development of the textile, plywood, and footwear industries was strongly emphasized, which turned out to be greatly successful, partly due to the global trend toward free trade.

In the course of such industrialization, the agricultural sector lagged behind in growth, and consequently the Third Plan stressed correcting the imbalance between the manufacturing and agricultural sectors. The industrialization policy centering on labor-intensive light industries began to reach its limitations due to wage increases, inadequate technological accumulation, and the participation of late-coming less developed countries in the world market.

From the mid-1970's, therefore, efforts have been directed toward deepening the industrial structure and providing for self-sustained growth through full-scale development of the heavy and chemical industries.

In the midst of the quantitative expansion

of the economy, however, special attention has been paid to such qualitative issues as social and economic equity, beginning with the Fourth Plan.

After the successful quantitative expansion and qualitative improvement during the past quarter century, the Korean economy began to decelerate mainly due to the second oil shock and the consequent world-wide economic recession. In 1980, in particular, it underwent the hardships of negative growth because of the additional burden of an unprecedented bad harvest. Fortunately, indications of a slow recovery appeared from 1981 to 1984, but the Korean economy as a whole was still suffering from the recession.

The causes of the difficulties could also be traced to the fact that the Korean economy failed to properly reorient its management strategy to the changing economic and social environment. At this turning point, the Korean economy had to overcome these difficulties in order to pave the way for its second take-off in the 1980's.

In 1982, Korea launched the fifth in its series of Five-Year Economic Development Plans, which have contained the primary guidelines for Korea's economic development. The Fifth Plan was formulated with three main goals in mind - to achieve economic stability (especially in prices), improved efficiency, and better balance in economic activities. These three goals were seen as the best means by which to recover from the economic setback of 1980 and 1981 and to lay a foundation for stable long-

term growth.

The recovery in Korea's economy, however, has been stronger and much more rapid than expected. Most major indicators had exceeded expectations. In particular, the inflation rate, which stood at 21.3% in 1981, fell to 7.3% in 1982 and has been currently running at about 2~3% per annum since.

Also, the balance of payments improved dramatically with the current account deficit falling from US\$4.6 billion in 1981 to US\$1.37 billion in 1984, and to US\$0.89 billion in 1985. Since the beginning of 1986, a turn around has occurred. Korea's balance of payments has reversed itself to show a growing surplus in its current balance as well as its trade balance. The total surplus for 1987 was US\$9.8 billion, an improvement of US\$5.2 billion in comparison to 1986.

This rapid improvement in economic conditions combined with the dramatic changes in the international economic climate, especially the fall of oil prices and interest rates and the beginning of the world wide recovery, made it clear that many of the original targets in the Fifth Five-Year Plan had become obsolete.

Thus, in mid-1983 the Government began to prepare a revised version of the Plan to cover the remaining years of the Plan period through 1986. The revised Plan retained all the main goals of the original, but the policy emphasis was changed to fit the current environment.

The Korean Government is currently pushing forward with its Sixth Five-Year Economic and Social Development Plan which covers the period of 1987~1991. The Plan aims at implementing a well-balanced future society in the 2000's, Placing emphasis on elevating efficiency and social balance as suming settlement of stability, which is a continuing goal strived

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at since the First Five-Year Plan. The Plan mainly focuses on promoting the following four tasks with the basic aim of constructing a welfare society based on self-growth :

- Systematic development of an economically sound society and settlement of social stability on the basis of autonomy and an open-door policy, efficiency and social balance.
- Development of an active community with well-balanced expansion of industrial development suitable to regional characteristics.
- Elevating social equity and enhancing social welfare by increasing the middle class and by promoting the living standard of the lower income class.
- Epoch-making elevation of industrial efficiency by reorganizing the industrial structure and by attaining a technologically advanced country.

Particularly since the inauguration of the Sixth Republic in 1988, we will develop our economy under the basic direction of "Autono-

my", "Fair Trade", "Balance" and "International Cooperation" in order to realize an advanced harmonized economy designed to narrow the unbalance among sectors, enabling the general populace to enjoy an affluent life.

Industrial Structure

Although to a large extent the Korean economy was characterized by agriculture up until the early 1960's, Korea has now become a newly industrialized state through the success of its industrialization strategy.

Between 1961 and 1987 the agriculture, forestry and fisheries sector's share of the GDP fell from 38.7 to 11.4 percent, while the mining and manufacturing sector's share increased considerably from 15.4 to 31.5 percent, with social overhead capital also expanding substantially to support this industrialization.

Since the 1970's large-scale investment projects have been undertaken in the steel, shipbu-

Major Economic Indicators in the Sixth Five-Year Plan					
Unit		1962	1976	1987	1991
Population	1,000persons	26, 513	35, 849	42, 082	44, 094
GNP	Current Prices US\$billion	2. 3	27. 4	118. 6	226. 0
GNP Growth Rate	%	2. 2	15. 1	12. 0	7. 5
Per Capita GNP	Current Prices US\$	87	765	2, 826	5, 100
Domestic Savings Rate	%	3. 3	23. 1	35. 6	34. 0
Investment Rate	%	12. 7	25. 5	29. 8	31. 7
Current Account	Current Prices US\$million	-55	-313	9, 800	6, 000
trade balance	"	-335	-590	7, 700	6, 000
exports	"	55	7, 815	47, 300	76, 700
imports	"	390	8, 405	41, 000	73, 300
invisible trade balance	"	43	-72	900	-500
net transfer	"	237	349	1, 200	500
Foreign Debt	"	166	7, 479	35, 600	23, 000
Overseas Assets	"			13, 200	23, 000
Unemployment Rate	%	8. 2	3. 9	3. 1	3. 7

Source : Economic Planning Board

Indicators Structure		Unit : %			
Economic field	Year	'61	'71	'81	'87
Agriculture, Forestry & Fisheries		38.7	27.0	18.0	11.4
Mining & Manufacturing (Manufacturing)		15.4 (13.5)	22.3 (21.0)	30.9 (29.5)	31.5 (30.3)
Social Overhead Capital		9.1	13.3	16.5	19.6
Other Services		36.8	37.3	34.6	37.5
Source : Economic Planning Board					

ilding, petrochemical and machinery industries in order to deepen the industrial structure. As a result, the share of manufacturing value-added by light industry delined ; while the share of machinery, primary metals and chemical industries increased.

Contribution of Science and Technology to Development

As has been generally recognized, technological development is a key factor in national economic growth along with labor and capital. According to a study conducted by the Korea Advanced Institute of Science and Technology (KAIST), the contribution ratio of technology to the economic growth rate during the period of 1966 to 1982 was 14.2 percent. This rela-

tively low ratio was attributed mainly to the fact that our economy was dominated by such labor-intensive light industries as textiles, electronic parts, and construction.

It is anticipated, however, that the contribution of technology will be increased considerably in the future due to the structural changes in industry as it shifts from labor-intensive to the technology-intensive heavy and chemical industries.

The contribution ratio of technology in Korea is still very low when compared with those of advanced countries like Japan and the U. S.A. This implies that the Korean economy needs substantial structural change through technical innovation to achieve a continuous high rate of economic growth.

Technology Contribution to Economic Growth		Unit : %					
		Korea ('66~'82)		U. S. A. ('66~'78)		Japan ('66~82)	
		Increase Rate	Contribution Degree	Increase Rate	Contribution Degree	Increase Rate	Contribution Degree
Manufacturing Added-Value		16.5	100	3.1	100	7.6	100
Factors increasing Added Value	Labor and Capital	14.2	86	1.5	48	2.8	37
	Technology* Progress	2.3	14	1.6	52	4.8	63
*Technology Progress is a broad concept including technology progress itself, efficient resource distribution, economy of scale and effective management. Source : Long-range plan of Science and Technology Toward 2000's, Korea Advanced Institute of Science and Technology, Dec, 1985.							