Korean Agriculture

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Glossary

Abbreviations and acronyms are used sparingly in this paper. The following lists are those organizations, groups, and books which are frequently referred.

MAFF	Ministry of Agriculture, Forestry and Fisheries
RDA	Rural Development Administration
NACF	National Agricultural Cooperatives Federation
NLCF	National Livestock Cooperatives Federation
LPMO	Livestock Products Marketing Organization
AFMC	Agricultural and Fisheries Marketing Corporation
KREI	Korea Rural Economic Institute
KFRI	Korea Food Research Institute
GATT	General Agreement on Tariffs and Trade
OECD	Organization for Economic Co-operation and Development
USDA	United States Department of Agriculture
MAI	Major Agricultural Indicators
Won	Korean currency

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Preface

This paper is a revised version of my paper "Korean Agriculture in the 1990s" which was submitted to the OECD secretariat in 1994. The principal objective of this report is to provide the readers with an appreciation of the current agricultural situation in Korea. It outlines the profile and evolution of the agricultural sector and contents of the major agricultural policies. It also explores some of the key issues confronting the Korean agricultural sector and policy makers and evaluates the policy effects on this sector. Given the importance of the Korean market in international terms, it is clearly desirable to understand the characteristics of Korean agriculture and to review agricultural policies implemented by the Korean government.

Korea's long history of agriculture is deeply rooted in tradition and culture. Agriculture in Korea, which focuses mainly on rice cultivation, dates back more than 5,000 years and continues to be deeply interrelated with the Korean way of life. Korean agriculture for several decades has been characterized by small family-operated farms, with an average farm area of around 1 hectare. Rice is the dominant crop, accounting for about 30 percent of total farm production. In recent years, rising income and population growth have increased demand for livestock, fruits and vegetables.

Until the 1960s Korea was a typical agrarian country, with agriculture generating almost half of its GNP, and employing a high proportion of its population in the agricultural sector. This situation however has changed completely with rapid industrial development, primarily initiated by the Economic Development Plan of 1962. During this economic development period, the agricultural sector lagged far behind the industrial sector because initial development thrust in other sectors was considered more important. With limited resources available, the government made

decisions stressing the industrial sector, which appeared imperative to achieve development goals.

Consequently, the agricultural sector has lost its relative importance in the Korean economy. The agricultural share in real GDP fell from 46. 2 percent in 1963, to 24.2 percent in 1973, to 14.7 percent in 1983, reaching about 7 percent in 1993. The labor force employed in the agricultural sector declined from over 60 of the total labor force in 1963, to about 50 percent in 1970, and about 12 percent in 1993. While agriculture's declining importance is common in other industrialized countries, there has been concern in Korea that the pace of the population decrease will continue to grow and the depopulation in rural areas has been too fast. The reduced importance of agriculture may undermine domestic agricultural production and therefore self-sufficiency in basic foodstuffs.

Though the relative importance of the agricultural sector has declined since the 1960s, agriculture in Korea has contributed to the national economy in a number of ways. It will continue to play an important role in providing foodstuffs, maintaining rural landscapes and amenities, and preserving Korean way of life. Many people in Korea still view agriculture as the backbone of Korean tradition and culture.

Agriculture in Korea in the 1990s faces a period of transition. Compared with the industrial sector, agriculture lags far behind, with an aging and decreasing farm population, low productivity, and an underveloped market structure. In the late 1980s, these problems had become fundamental and structural. For example, economic growth affected the agricultural sector. It raised demand for food, leading to changes in dietary pattern, away from food grains towards livestock products and non-traditional fruits and vegetables. It also led to changes in production patterns and to the inevitable import of animal products. With limited agricultural resources, Korea now needs to import many agricultural prod-

ucts to support industrial expansion.

In recent years, the need for reform in agricultural policy has increased in conjunction with the chronic farm problems facing the agricultural sector. The effectiveness of agricultural policies is being questioned and the public has become increasingly aware of the large size of agricultural outlays, about 10 percent of the total national budget. Pressure from major trading partners, who are appealing for greater liberalization of the agricultural market, is also strong. Many people in both the public and private sectors have recommended agriculture's general reform along market-oriented principles.

Several new programs have been implemented in Korea including the so-called "Agricultural Structure Adjustment Plan" introduced in 1991. This was followed by the 1993's "New Agricultural Plan", and "Agriculture and Fisheries Development Plan" initiated in 1994, to prepare for the changes in the agricultural sector. Changes in agricultural policy will be accelerated by the launch of the World Trade Organization. Further reform towards a more efficient agricultural sector is expected to continue in the future. Korean agriculture in 1995 stands at a crossroads. Faced with problems both domestic and from abroad, Korea must make important decisions regarding the future development of agriculture, its position in trade negotiation, and the distribution of national resources.

This paper is organized into five parts. The introduction provides general information on Korea and summarizes the economic developments which have occurred since the 1960s. For a better understanding of the Korean agricultural sector, it is necessary to explain the macro economic situation, because the interaction between agriculture and the rest of the economy is growing in line with development, and the situation will provide us with the potential for further development of the agricultural sector.

Part I : "The Agricultural Situation In Korea," deals with the main structure of the agricultural sector in Korea. This includes agriculture in the Korean economy, characteristics of Korean agriculture, and agricultural production. Agriculture's relative importance and the declining role of the agricultural sector are discussed in section I. The characteristics of Korean agriculture, including farm numbers, farm population, arable land, farm income, capital, debt and equity, food consumption, and self-sufficiency in major products, is described in section II. In section III, farming pattern, agricultural production including grain, livestock, fruit and vegetables, are discussed.

Part II: "Trade in the Agricultural Sector," major agricultural exports and imports are discussed. The coverage includes Korea's trade in perspective, agricultural exports and imports, and trade liberalization. Korea's general trade system and some trends in agricultural trade are given in section I. This is followed by a descriptive section detailing the agricultural exports and imports, in section II and III. In section IV, the contents and process of recent trade liberalization in Korean agriculture is outlined briefly.

In Part III: "Agricultural Policies," policy objectives, practical policy operations, and recent policy changes are examined. Major policy objectives, administrative organizations and historical perspectives are described briefly in section I. In section II, major policy instruments are discussed, including rice price support policies, livestock price stabilization program, marketing improvement program, land base improvement program, input subsidies, and research and technology programs. Special attention is given to the rice price policy. Agricultural credit and some budgetary outlays on the agricultural sector are also reviewed in section II. This is followed by recent policy changes in section III, where structural problems facing the agricultural sector, need for further reform, new policies, and some impediments to reform are discussed.

In Part Ⅳ, 'Evaluation of Korean Agricultural Policy,' the Korean agricultural sector is assessed. This assessment encompasses government intervention, agricultural performance, and impacts of the Uruguay Round trade negotiations. Extensive government interventions and the main effects of agricultural policies, are discussed in the areas of assistance to farmers, nominal rates of protection, and producers and consumers subsidy equivalents of major agricultural commodities in section Ⅰ. Agricultural performance is described briefly in section Ⅱ. In section Ⅲ, impacts of the Uruguay Round agreements on the Korean agriculture is assessed and is followed by a summary and conclusion.

The method of study is a descriptive examination of available data, primarily the 1994 Major Agricultural Indicators(MAI). Additional data used is taken from the MAFF Statistical Yearbook of 1994 and other recent MAFF publications. The Trade Policy Review Mechanism(TPRM) report submitted to the GATT secretariat in 1992 was also a useful source of information. Since it would be impossible to discuss all aspects of the agricultural situation, I have focused on the important issues in Korean agriculture. With limited data, time and resources it was possible to carry out limited analysis, and in many cases, the ststements leave room for further examination.

Many OECD colleagues provided comments and suggestions on my initial draft, and I am grateful for their help. I owe a special debt to Joanna Hewitt, Head of the Country Studies Division I and Structural Adjustment, for her excellent suggestions which were extremely useful in developing this paper. I specially appreciate the encouragement to carry through with this report given by Gerald Viatte, Director of Food, Agriculture and Fisheries in OECD. Particular thanks are due Mei Li Lee, for her through review, excellent critique and accurate edition. I express my sincere gratitude for their contributions.

Jaesoo Kim

INTRODUCTION

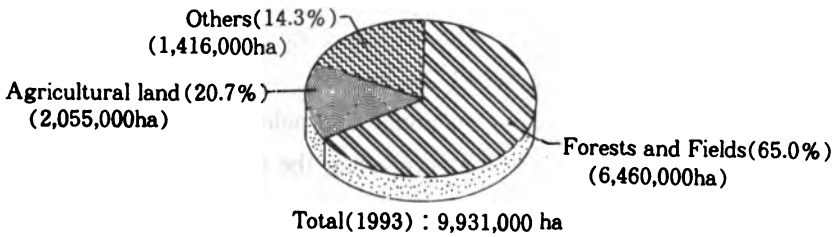
I. Korea in General Perspective

1. Location

Korea is a peninsula stretching north to south over approximately 1,000km. Located in the temperate climate zone, it is bordered on the west by the Yellow Sea, on the east by the East Sea, and on its northern border by China and the former Soviet Union. Geographically, the Korean Peninsula and its islands lie between 124°36'E and 131°52'E and between 33°06'N and 43°01'N.

Korea's total national area is small: 221,183 square kilometers (South Korea: 99,310 sq. km, North Korea; 121,873 sq. km), and is characterized by abundant hills and mountains. The administrative area of South Korea is only 9,931,000 hectares(99,310 km2), about 45 percent of the total peninsula. Of the 9.9 million hectares of land area, approximately 20 percent, or 2.1 million hectares are cultivated agricultural areas. Another 80 percent of the total land is mountainous(Figure 1).

Figure 1. Land Use Patterns



Korea has had almost twelve hundred years of history as a unified nation. However, as a modernized country, Korea was established in 1945, following Japan's defeat in the second World War. Unfortunately, the nation's liberalization from its status as a Japanese colony in 1945 was followed by the division of Korea into two parts; south and north. The Republic of Korea (South Korea, hereafter Korea) was invaded by North Korea (Democratic People's Republic of Korea) in 1950, and the war ended in 1953. Since then, the Republic of Korea has been in confrontation with North Korea.

Throughout its history Korea has interacted with China, Japan and other Asian countries, and has been confronted with the effects of its neighboring countries. The location of the Korean peninsula has both advantages and disadvantages. The advantages of easy access to the continental area and land bridge to the Pacific Ocean can also be a disadvantage, as witnessed by the frequent aggression experienced in the past from its powerful neighbors: China, Russia, and Japan.

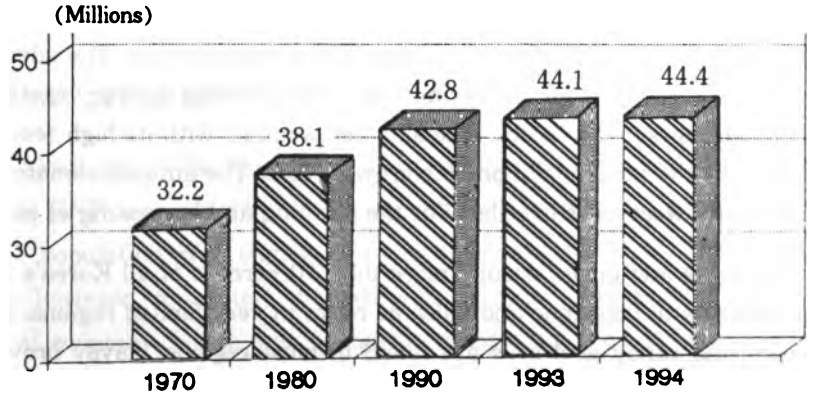
Korea has made considerable progress over the last four decades in the areas of economic development, political democratization, and social reform. The economic development plan introduced in 1962 laid the foundations for a period of rapid economic growth. In recent years, Korea has attracted global attention because of its remarkable economic growth, its progress in democracy, the success of the Seoul Olympic Games and the successful achievements of the Northern policy. There still remains, however, much to be improved in several areas including strong government intervention, imbalance between the sectors, and irrational institutions, as is reflected in recent social, economic and political reforms, A series of reforms in all areas are aimed at preparing the country to succeed as an advanced nation.

2. Population

The total population of Korea in 1994 was about 44 million, with a density of 449 persons per square kilometer. Due to the large inflow from Japan and China after the end of World War II, the total population has increased rapidly since the 1960s. In 1965, the total population stood at 28.7 million, but by 1980, it had increased to 38.1 million and by 1994 it had reached 44.4 million.

However, because of the successful achievement of the family planning policy and partly because of the increase in income levels combined with changes in job opportunities, the population growth rate has declined from 2.5 percent per annum in 1965 to 0.9 percent in 1993. Nevertheless, the high density of 449 persons per square kilometer in 1994 remained a serious problem for Korea. Of the total population, about 12 percent(5.4 million) were involved in agriculture in 1994(Figure 2).

Figure 2. Total Population Change



Korea has been pressed to support its large population, and people's livelihood with limited land resources. The stable supply of food has been the most important policy objective of the nation. Therefore, the agricultural policy has strived to provide an adequate and safe supply of food for the people.

3. Climate and soil

Korea is situated in a temperate monsoon belt, with an average temperature of 15℃ and an annual rainfall of 1,300mm. Annual precipitation varies from 500 to 1,500mm and annual mean temperature from 5℃ to 14℃. More than half of the annual precipitation is recorded between June and August. Due to the influence of the East Asian monsoons, the Pacific ocean in summer and the Asian Continent in winter, Korea has four distinct seasons: crisp weather in spring and autumn, hot humidity in summer and moderate cold in winter. Seasonal changes are gradual; spring and autumn are relatively short while summer and winter are rather long.

The Korean climate is harsh for raising forage crops and cereals and is favorable for cultivating rice, originally a tropical crop. The adequate spring rain is good for preparing rice seeds, sowing spring vegetables, and planting summer crops. The summer weather with its high temperatures provides ideal conditions for growing rice. The autumn climate with dry, sunny weather is excellent for the ripening and harvesting of rice.

Granite and gneiss occupy more than 70 percent of all Korea's natural rocks, with limestone and volcanic rocks in very limited regions. Light brown and sandy acid soils are found in most regions, clayey brown to red soils in the granite areas. Soil components, especially the cultivated paddy soils, have been changed due to plowing, irrigation and the use of fertilizer over a long time. In addition, the changeable continental climate and summer showers are other factors which make the soil susceptible to weathering, and erosion.

II. Economic development and outlook

Before studying the agricultural sector, it is useful to review the general features of economic developement in Korea, because it helps to explain the relative role of agriculture in the national economy, as well as it provides the potential for the further development of the agricultural sector in Korea. In addition, the interactions between agriculture and the rest of the economy are complex and become more important as Korea develops.

Agriculture in Korea has progressed in line with the development of the national economy. The policies and events in the agricultural sector have an effect on and are affected by the policies and events in the other sectors. Although the role of agriculture in the economic development has declined considerably, the agricultural sector has played a very important role in Korean economy and has very close relations with other sectors including rural-urban migration, changes in consumption patterns, and gross domestic products and so on.

1. Past performance

Unitil the 1960s, Korea was a typical agrarian country. Almost half of its GNP was contributed by agriculture and over 50 percent of the total population was engaged in the agricultural sector. The situation was, however, completely changed with the rapid development of the national economy, which was primarily initiated by the economic development plan. Since the initiation of the First Five-Year Economic Development Plan in 1962, Korea has experienced rapid economic growth, while the agricultural sector has lagged far behind the industrial sector.

Economic development based largely on industrial sector

For the past thirty years, Korea's economic development has been based on the success of its industrial sector in competing on world markets. During the past 30 years, the average annual GDP growth rate was one of the highest in the world. Since 1962, Korea's GNP has grown at an average rate of about 9 percent per year, and per capita income increased sharply from $US 87 in 1962 to $US 1,592 in 1980 and to $US 7,670 in 1993(Table 1).

Export volumes increased sharply from around $US 55 million in 1962 to $US 1 billion in 1970 and to $US 9.6 billion in 1994. The rate of unemployment has fallen from over 8 percent in 1962 to 4.4 percent in 1970 and to 2.8 percent in 1993. The share of the manufacturing sector has quadrupled to a third of real GDP. The service sector, accordingly, has grown steadily.

The high economic growth continued until the 1980s. Since 1981, the annual growth rate has never fallen below 6 percent, and reached a peak of 13.0 percent in 1987. The actual GNP growth during the sixth economic plan period (1987-1991) showed 10 percent, the highest growth rate during the economic planning periods.

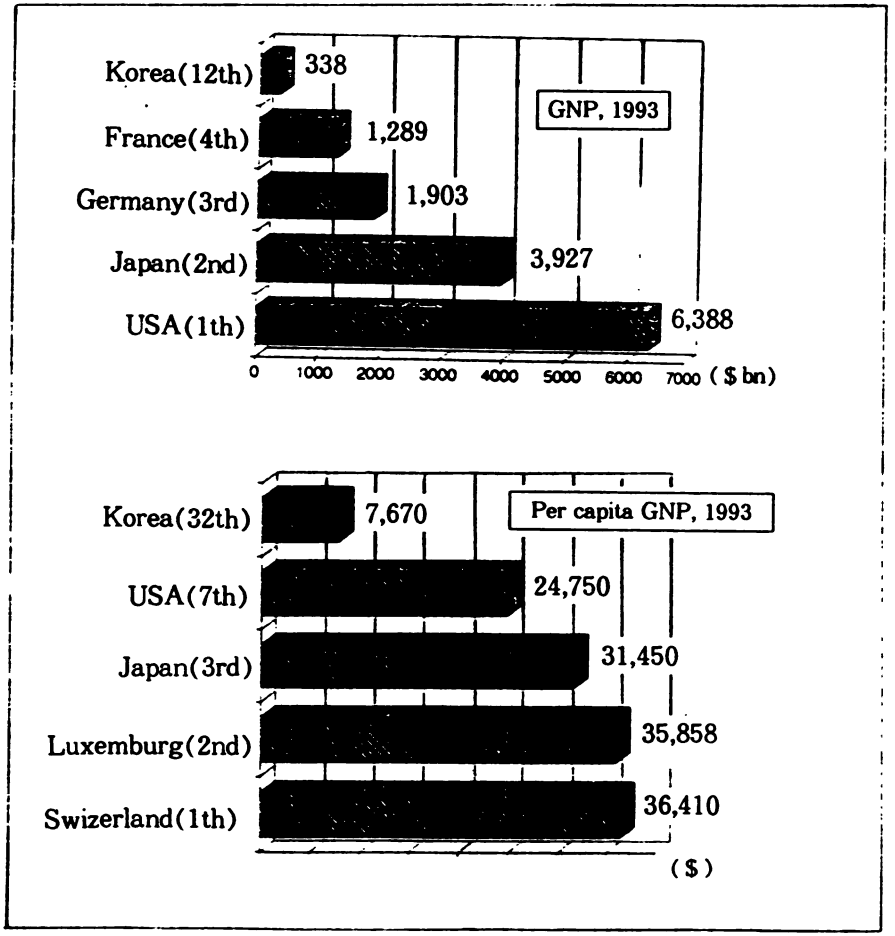
Table 1. Major Economic Indicators

	1962	1970	1980	1990	1993
GNP($ billion)	2.3	9.5	60.5	251.8	338.0
Per capita GNP($)	87	289	1,592	5,883	7,670
Exports ($US million)	55	840	17,500	65,020	82,236
Imports ($US million)	422	1,980	22,290	69,840	83,800
Unemployment(%)	8.2	4.4	5.2	2,4	2.8

Sources : Ministry of Finance and Economy(MOFE)
Bank of Korea
Economics Statistics Yearbook. Various Issues.

In recent years, Korea's role in the world economy has expanded, as represented by the increasing trade volume. Korea's exports and imports accounted for almost 2 percent of world trade in 1993, ranking Korea as the world's 11th largest trading country (13th exporting country and 14th largest importing country). Korea in 1993 ranked 12th in terms of GNP and 32th in terms of per capita GNP, respectively (Figure 3)

Figure 3. Korea in the World Economy



Sources of growth

The remarkable economic growth in this period derived basically from Korea's export-oriented economic policy, which was supported strongly by chief labor and extensive government interventions in the form of trade restrictions, subsidies and credit allocation. Of course, the successful domestic development strategy supported by an abundant, well-educated labor force, and partly by private investment, has been the major source of growth. As a result, national policies have been designed to ensure that the Korean industrial sector was able to succeed in international markets.

According to the TPRM (Trade Policy Review Mechanism) report, " Korea's strong growth performance has been based on an outward-oriented, high investment strategy, supported by generally prudent macroeconomic policies and sustained by high domestic savings and continuous access to foreign borrowing and overseas markets. The latter has facilitated rapid trade expansion, diversification of the export base and greater integration of Korea into the international economy. In this regard, Korea has been a significant beneficiary of the liberal multilateral trading system".

The impacts of economic development

Rapid economic growth resulted in a marked improvement in living standards across all sectors of the economy. Real per capita income increased eight-fold between 1961 and 1992. However, strong growth was accompanied by significant changes in the structure of the economy. The agricultural sector(including forestry and fisheries) has lagged far behind the industrial sector, and has been losing its relative importance. During the economic development period, the agricultural sector was given little attention because development in other sectors were considered more important. The share of agriculture, which accounted for more

than one-third of GDP in 1961 and almost two-thirds of employment, declined sharply.

The percentage share of agriculture in real GDP has decreased from 46.2 percent in 1963, to 24.2 percent in 1973, to 14.7 percent in 1983 and to 7.1 percent in 1993. Total productivity in the agricultural sector has remained at about one-third of that of the manufacturing sector. Thus, the average annual growth rate for agriculture has remained around 3 percent, while other sectors showed approximately a 9 percent increase

Such an unbalanced economic growth pattern has since been seen as undesirable for the sound development of the nation. Recently, in an effort to achieve more balanced development between the agricultural and non-agricultural sectors of the economy, the government has placed greater emphasis on the agricultural sector.

The Seventh Five-Year Economic Development Plan

Looking toward the 21st century, at the end of 1991, the Korean government established the Seventh Five-Year Economic and Social Development Plan covering 1992-1996. The major objectives of the plan are advancement to the level of industrialized countries and the reunification of the Korean peninsula. According to these objectives, Korea will(i) strive to enhance industrial competitiveness, curb inflation and achieve external balance,(ii) spur balanced growth among various regions and sectors for sustained economic growth, and improvement of the quality of life,(iii) pursue economic deregulation and further open-market measures and promote international economic cooperation"(TPRM).

The seventh economic plan contains a number of ambitious targets. With respect to the future of the plan, the KEIA(Korea Economic Institute of America) report stated: "The most notable feature of the Plan is that it projects per capita Gross National Product to reach $ 10,900 in

1996. This figure compares with an estimated $ 6,300 in 1991. This will put Korea among what the World Bank considers high income economies, and is slightly more than half that achieved by the average OECD country in 1989. Total GNP will reach the equivalent of $ 493 billion in 1996, a growth rate of 12.5 percent in nominal GNP terms" (Table 2).

Table 2. Economic Targets of the Seventh Five-Year Plan

	1986	1991	1996 (projected)	Growth Rate 1992-1996
GNP($ US billion)	102.8	272.7	492.6	12.5
Per capita GNP($ US)	2,505	6,316	10,908	11.5
Exports($ US billion)	34.7	72	140	13
Imports($ US billion)	31.6	81	140	11
Current account($ US billion)	4.6	-10	6	
Consumer prices(% change)	1.4	9.5	5	6
GNP in manufacturing(%)	31.7	28.7	30.7	9.8
Jobless(%)	3.8	2.4	2.4	

Source : MOFE(1995), Korea

It is difficult to predict how successful the Plan will be. Some observers remain skeptical about the potential success of the plan. In fact, the Plan contains a number of assumptions; slightly impractical strategies and some long-term predictions. For example, consumption, expanding annually at 7 percent, fixed investment by 8.3 percent, and an increase in exports of 9 percent. These are very ambitious targets to be accomplished in such a short period of time. However, this does not mean that the Plan is obviously impossible to achieve. On the contrary, past experience shows the level of economic progress that is possible over a relatively short period of time.

2. Recent trends and prospects

Recent economic performance appears to be in recovery phase from the sluggish growth in the early 1990s. The sharpest downturn in the early 1990s was due to the world-wide economic recession and unfavorable domestic conditions, including labor disruptions, excessive wage hikes and the lack of research and development.

In 1990, for the first time since 1985, Korea posted a trade deficit of $US 4.8 billion. In 1991, GNP reached $US 281 billion(9.1% growth), inflation was 9.3 percent, while merchandise exports increased 9.4 percent and imports grew by 17.4 percent. This deteriorating situation in the national economy continued in 1992. In 1992, GNP reached $US 294 billion(grew by 5.0 percent). Although the 1992 GNP was higher than the previous year, the annual growth rate was considerably lower than the 1991 rate. The 1992 per capita GNP was at $US 7,007, exports were at $US 77 billion, and imports were at $US 82 billion. According to the OECD, Korea's economic growth in 1992 was the lowest since 1981, largely because of its tightened economic stabilization policies. In addition, in 1992 Korea posted a trade deficit for the third year in a row. On a customs clearance basis, the deficit reached almost $US 5.1 billion. For the moment, as imports grow faster than exports the deficit will increase. The main increase in imports in 1992 was led by machinery, metals, and oil, but imports of consumer goods also increased.

In 1993, however, the economy started to show an improving trend, though it has slowed down from the levels experienced in the 1980s. The growth rate of GNP in 1993 was 5.6 percent compared to previous year's 5.0 percent. The 1992-'93 slowdown was a result of the government stabilization policy to slow and overheated economy. In 1994, the Korean economy showed a recovery after suffering from the past recession. GNP posted a growth of 8.3 percent due mainly to the rise in exports, which

benefitted from a weak Korean currency, and an increase in capital investment. Private consumption grew 7.5 percent in 1994.

Forecasts

The outlook for 1995 is bright and the economic situation seems more favorable than in 1994, mainly because of the increased industrial investments and higher domestic consumption. Some institutes predict that the economy will grow at least 7.3 percent in 1995. Several prominent economists indicated that they expect the strong growth to continue until 1997 at least. There are concerns, however, that the rapid expansion could create inflationary pressures. Inflation is predicted to reach 6 percent, following a 5.6 percent increase in 1994. The government is expected to slow growth this year by tightening monetary policy.

In addition, recent reform in the economic sector will revitalize the economic growth and thus encourage economic activities. Many foreign economists also predict that the Korean economy could face difficulties in 1994, but some improvements will occur in major sectors. However, the upward trend in unemployment and some reluctance about reform are still causing concern. The current account fell into a deficit of 6.3bn in 1994 as imports grow due to stronger domestic demand. To some extent, the emphasis in Korea's economy seems to be shifting from domestic to foreign sectors, indicating that it is entering a more mature phase of development.

Forecasts on the future of Korea's economy are optimistic judging from the continued growth, rising income, and the basic strength of the Korean society. According to the Korea Development Bank forecast, the Korean economy will grow at an annual rate of 6.8 percent between 1992 and 2001. Per capita income will rise from $US 6,500 in 1991 to about $US 17,400 by the year 2001, and total production(GNP) will grow from $US 273 billion in 1991 to $US 818 billion in 2001.

Many domestic economists as well as the national institute predict that the Korean economy will remain robust throughout the 1990s due to nation-wide reforms in all sectors, increased investment and more active exports, as well as to the hard-working employers, deregulated government policy, and market-oriented behavior. Indications from the early 1990s support this optimistic outlook. In addition, the recent political stability will make an important contribution to the vigorous growth of the economy, because the establishment of a firm foundation for democracy is surely to provide greater stability of the economy in the long run.

3. Major initiatives for the new administration

The new government initiated in February 1993, announced in April 1993 an economic plan, "New Economic Plan", followed by the "100-Day Plan", to revitalize economy. Because of the relatively poor performance of the Korean economy over the past years, the government made economic revitalization a priority for the new administration.

The focus of the Plan was placed on tightened economic policy and increasing competitiveness of the economy. The plan also would ease government regulations on private business activities, particularly, financial transactions on overseas markets. The plan seems to be ambitious, planning average annual growth rate at 7 percent, consumer price index by 3.6 percent, and trade surplus around $ US 10.4 billion by 1998. In many respects, this plan differs from those of other policies. A key ingredient is deregulation. In fact, the chief reform is taking place in the financial sector where many of the important government instruments in managing the economy remain

Real-Name System

· On August 12, 1993, the government issued "Real-Name System" and banned the further use of pseudonyms in financial transactions to ra-

tionalize the financial system and reduce corruption and tax evasion. The implementation of "Real Name System" for financial transactions was viewed as a vital institutional reform to ensure a clean society and to cut the relationship between business and government, thus seemed to be the most significant performance of anti-corruption drive for the new administration.

The dramatic introduction of "Real-Name System" in financial transactions has been criticized for not considering the present financial transaction practices. For example, small and medium businesses have depended heavily on funding from the unofficial curb market, which is largely financed by money under false names. Some analysts expected the economic performance would be sluggish in 1993, as a result of the real name system. But most people expressed confidence and optimistic predictions that the economy would recover in 1994 as the nation adjusted to the new system.

The new government of President Kim Young-Sam strongly supports the reform and believes that deregulation of the financial industry will promote more efficient allocation of credit and eventually improve financial competitiveness, while reducing corruption, one of the main goals of his administration. The reform policy will encourage autonomy and increase competitiveness.

Internationalization and globalization

Korea's role in the world has also focused the administration's commitment to greater participation with the world economy. Korea was one of the cofounders of APEC(Asia Pacific Economic Cooperation) and served successfully as a member of the group. Korea is also continuing to become a full member of the OECD by 1996. By 1996 Korea's per capita income will be about the same as in Greece and Portugal. Although Korea is significantly different from OECD countries, Korea has many of the

characteristics of an developed country in the areas of economic performance, structure of industry, and overall economic size.

In addition, recent efforts to send experts to the third-world, in order to provide technical assistance with funds, and participate in many international organizations are practical proof of Korea's growing role and responsibility in the world. Judging by these criteria, Korea will soon be listed among the most important countries in the world.

Many papers have emphasized the global role of Korea. The recent discussions both within Korea and among the OECD countries on Korea's possible full membership of OECD is a good example that reflects Korea's role in the world. R.A.Cornell, Deputy Secretary General of the OECD stated: "Korea already has begun to forge strong linkage with the global economy, the process has gone quite successfully so far, and it can be reversed only at heavy economic and social cost". Il Sakong, former Minister of Finance and Senior Economic Secretary to the President of Korea, stated: "Korea should be ready to adapt to the new world order by actively assuming its share of responsibility and costs".

However, OECD membership may not guarantee that Korea will become an industrialized and developed country. It may require an overall liberalization of the national economy, including monetary and fiscal policy, capital movements, foreign investment and agriculture. To become an OECD member country, Korea must abandon outdated government regulations and esbablish a new policy direction toward the global economy.

A good example of Korea's commitment to internationalization has been its positive participation in the Uruguay Round negotiation. Korea's decision partially to open its rice market has been a good performance of its indication that Korea is moving toward internationalization, though the decision has been very unpopular at home. The continuous market opening policy of the Korean government since the 1980s is the actual

support for this fact, as was stated by the recent OECD paper:The Korean economy, which has continuously grown for the past 30 years, will further expand foreigners' access to domestic industries with special emphasis on services and agricultural industries, an action which is intended to help achieve a mature economy. Many on going reforms are part of an effort to bring Korea's system into confirmity with the norms of the developed countries.

However, in order to continue catching-up with the more advanced countries, further reform in economic policy is necessary, in particular, the institutional and policy pattern of the Korean economy needs to be changed. Korea's efforts to internationalize and globalize its economy will further its goals of expanding trade, promoting regional cooperation and stability. Korean officials realize that they are no longer treated as a developing country. The coming years will give us last chance to enhance Korea's international competitiveness. Thus, whether Korea succeed in the development of the economy which is now facing structural transformations will depend on the willingness of the people to rationalize, internationalize and globalize the economy.

Part I

THE AGRICULTURAL SITUATION IN KOREA

I . Agriculture in the Korean economy

1. Importance of agriculture in the national economy

Until the 1960s Korea was a typical agrarian country, which agrriculture generating almost half of its GNP, and employing half of the labor force. In 1970, agricultural production contributed 27.2 percent to gross domestic product, and the labor force employed in the agricultural sector accounted for 48.2 percent. Agriculture in Korea still has an important role in the national economy, accounting for relatively large shares of GNP(7.1% in 1993)and employment(14.8%), although the share of agriculture is declining continuously.

As in many other countries, Korea's agricultural sector has contributed greatly to the development of the economy through supply of food stuffs increases in gross national product, labor supply for the non-farm sectors, and capital generation, as well as by conserving the environment and preserving the Korean culture.

Agriculture, the foundation of the nation

An ancient Korean saying "agriculture is the foundation of the nation", or "farming is a divine calling" well represents the special position of agriculture in the Korean society. Koreans still think that they have their roots in farming, and have relatives on farms or in rural areas. Farmers and agriculture in Korea have retained their reputation and privileged position in Korean society.

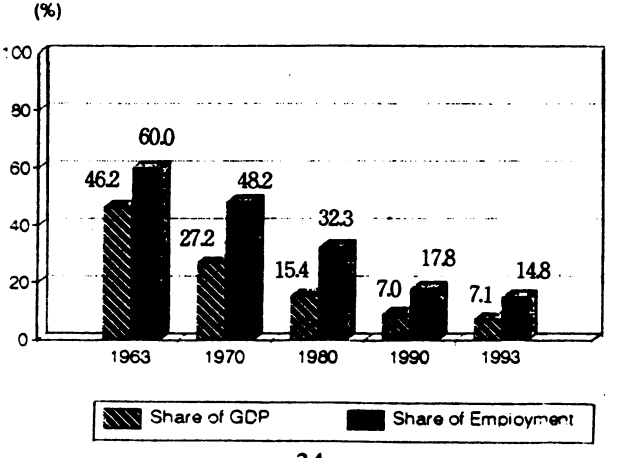
There has been extensive intervention, therefore, in Korean agriculture from the production to the consumption level for the past decades. Strong government intervention responds to the high value Koreans place on agriculture. This reflects the considerable power of agricultural interests which is in part derived from widespread support from the general population.

Most people accept that the agricultural sector is the backbone of Korean culture and tradition. Agriculture in Korea, thus, is perceived to be important for security, stability and prosperity of the nation. An example is the continuous growth in government support to the agricultural sector through its policies, particularly with respect to rice, despite pressures from foreign trading partners. Several ongoing research efforts have attempted to gain a better understanding of the importance of the agricultural sector in Korea.

2. The decline of the agricultural sector

The importance of agriculture to the Korean economy is declining. Since the late 1960s, agriculture's share of the gross domestic product has been falling steadily. Agriculture's contribution to GDP fell from 46.2 percent in 1963 to almost 7.4 percent in 1992. In 1993, its contribution was only 7.1 percent. Labor force employed in the agricultural sector also declined from 60 percent to 14.8 percent over the same period(Figure 4). This decline is expected to continue with rapid industrial development, which was primarily initiated by the industry-oriented economic development plan in 1962

Figure 4. Agriculture's Share of the National Economy



The level of self-sufficiency, for most major crops, has also fallen. Thus the performance of the agricultural sector in Korea seems meager, in contrast to the successful development of the industrial sector. Real GNP in the manufacturing sector has continuously grown from 8.2 percent in 1963 to 18.1 percent in 1973, 28.2 percent in 1983, and 33.5 percent in 1990. This decline in the GDP and employment is expected to continue in the future.

Given the decline in the relative importance of the agricultural sector, Moon and Kang stated in a paper presented to the World Bank: " Although agriculture's contribution to GNP growth appears relatively small, its performance since 1962 has actually exceeded the world average. Korea probably has one of the highest levels of land productivity in the world, largely because it has a good supply of farm workers relative to its scarce land resources. However, the amount of cultivated land per household-- which has remained at about 1 hectare since 1960-- is probably the lowest in the world. Given the poor land resources and limited substitutability of capital and labor, it was inevitable that agriculture would lag behind the other sectors".

From a purely quantitative viewpoint, the share of agriculture in the national economy is low and declining. This is a continuing trend that began with Korea's switch to an outward-oriented development strategy in the early 1960s. To a certain extent, this is a common trend to most developing and export-oriented countries. This trend is inevitable in the move toward an industrial economy and it signals a shift in the national economy from the agricultural sector to the manufacturing. The agricultural sector is expected to shrink further although there is a scope for improved efficiency. However, to achieve balanced economic growth, balanced development between the agricultural and non-agricultural sectors is important.

Agriculture, part of the national economy

Agriculture in Korea has progressed in line with the development of the national economy and, thus agricultural policy is part of the national economy in several terms. Many fluctuations in Korean agricultural economy are directly related to the economic health of the other sectors. Continuous rural-urban migrations have led to changes in wage structure in the manufactured area. In addition, rapidly increasing consumption of horticultural, livestock, and processed food products has also led to changes in wage and production structures both in rural and urban areas.

Economic growth has also resulted in changes in consumption patterns, from cereals to high-quality products, accordingly changes in production structure in the agricultural sector. These changes are of great concern to the agricultural sector as well as the other sectors. In recent years, interdependence between the sectors has encouraged the Korean agricultural sector to adopt new policies which emphasize economic efficiency rather than higher support, and to alter fundamentally the structure of agriculture. At times, problems in the agricultural sector have led to emotional debate within the general public.

On the other hand, there is increasing public concern about the effectiveness of the agricultural policy including the growth in the deficit on grain management account. In terms of share in total national budget, the budget of the Ministry of Agriculture, Forestry and Fisheries amounted to almost 10 percent of total government expenditure in 1994 while there are also substantial expenditures invested by other ministries. The government also has to consider the difficulties of other sectors of the economy and there is less sympathy for the idea that the agricultual sector should be considered an exception. Growth in other sectors therefore is important for the successful accomplishment of the agricultural policy.

Korean agriculture, part of the world economy

Recent developments which have increased Korea's economic interdependence within the global economy have prompted Korea to adopt new approaches to agricultural policies and to alter fundamentally the basis for its policy framework. It is almost impossible for the Korean agricultural sector to be isolated completely from international market forces. The trade effects of Korea's agricultural policies have been of great concern to its trading partners which export agricultural products. Thus reforming agricultural policies, especially reforming trade policies, have to be reviewed in the context of international considerations, because economic interdependence will become even more important as Korea is integrated in a rapidly growing world economy. It seems likely that Korea's agricultural sector is now a part of the changing world economy.

II. Characteristics of Korean agriculture

Historical, cultural, political and social factors have an important effect on the way agricultural policies have developed in almost all countries, and Korea is no exception. Korea's long history of agriculture is deeply rooted in tradition, culture and mentality of Korean people. In Korea, agriculture focuses mainly on rice cultivation. This concept dates back more than 5,000 years and continues to be interrelated deeply with the Korean way of life.

Korea's agriculture is characterized by small owner-operated farms with an average cultivated area of around 1 hectare for several decades. Rice is the dominant crop, accounting for about 30 percent of total farm production value, while rising income and population growth have created increased demand for livestock products, vegetables and fruits. Korean farmers produce a variety of commodities, and most farmers are engaged in producing mainly rice on paddy fields, and to some extent, fruits and vegetables on uplands. Livestock, fruits and vegetables gave increased their shares in both food production and consumption. Changes in tastes and lifestyles, and higher incomes have increased demands for livestock products and caused a rapid expansion of livestock output. The government has allowed beef imports since the late 1980s.

While farm income is supported primarily through strong government intervention and import restrictions, the performance of the agricultural sector in Korea seems meager, in contrast to the successful development of the industrial sector. The agricultural sector has lagged far behind the other sectors because the development priority has been given to the other sectors, where growth and contribution to the national economy seemed larger than the agricultural sector. Due to strong government intervention, the farm sector is highly dependent on government support and is unprepared for market liberalization. Farm income and agricultur-

al productivity remain relatively low.

Over the years, Korea has become self-sufficient in some major products. However, Korea continues to be heavily dependent on agricultural imports. Despite the sensitivity of liberalizing agricultural imports, Korea must import large quantities of agricultural products to satisfy its domestic requirements. After 40 years of strong government protection, the Korean agriculture sector is at a crossroads. There is growing demand from both the major trading partners and domestic consumers for changes in its agricultural policy.

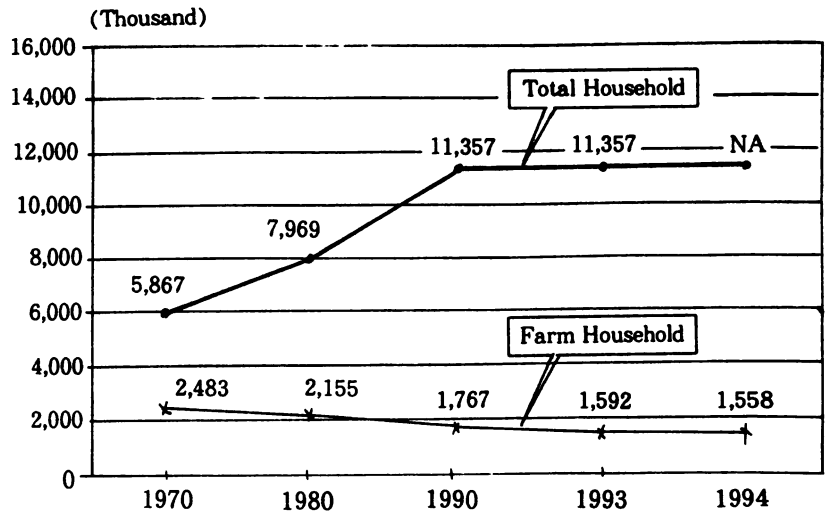
The Korean government's steady protection of the agricultural sector has faced extensive review and the sector has reached a critical juncture in the 1990s, as Korea's government is advocating new directions for the agricultural policy. A series of agricultural policy reform is aimed at preparing the sector to compete with world markets and to succeed in more advanced sectors.

1. Number of farm households

Decline in farm households

The number of farm households declined from 2.5 million in 1970 to 2.2 million in 1980, and to 1.6 million by the end of 1994. The number of farm households peaked in 1967 at 2.6 million with farm population of 16 million, and since then declined sharply. Farm households accounted for about 15 percent of all Korean households in 1993, while farm population accounted for 12.3 percent of total Korea's population(Figure 5). The decrease in farm households between 1994 and 1993 was 34,000 or 2.1 percent. Accompanied by the decrease in the farm population, the number of total farm households also declined sharply.

Figure 5. Farm Numbers



About 60 percent of full time farming

Of the 1.6 million farms in 1994, about 60 percent(0.9 million farms) were full time farmers depending on agricultural activities for 50 percent or more of their income. The percentage of full time farm households has been decreasing gradually, from 90.7 perdent in 1965 to 76.2 percent in 1980 and to 59.6 percent in 1990. In 1991, it increased to 65.7 percent but in 1992 it fell to 62.5 percent(Table 3). This trend may be caused partly by industrialization and unbanization, but could also reflect a commercialization of farming in rural areas.

Table 3. Farm Numbers by Full-time and Part-time

	1970	1980	1990	1994
	..... 1,000 households(percent)			
Total	2,483(100.0)	2,155(100.0)	1,767(100.0)	1,558(100.0)
Full-time	1,681(67.7)	1,642(76.2)	1,052(59.6)	931(59.7)
Part-time	802(32.3)	513(23.8)	715(40.4)	627(40.3)

Source : MAI(1994). MAFF statistics(1995)

40 percent of part time farming

The number of part-time farm households stood at 627,000, accounting for 40.3 percent in 1994(part time farm households are those in which one or more household members are engagen in jobs other than farming). The proportion of part time farm households has also increased gradually, from 9.3 percent in 1965 to 23.8 percent in 1980 and, peaked at 40.4 percent in 1990. But in 1991 it fell to 34.3 percent, while in 1992 it increased to 37.5 percent.

This represents the increased opportunities of earning and incentives for off-farm work in rural areas. In recent years, rural people have other opportunities to work in crafts or local industries, in line with the development of rural industrialization policies.

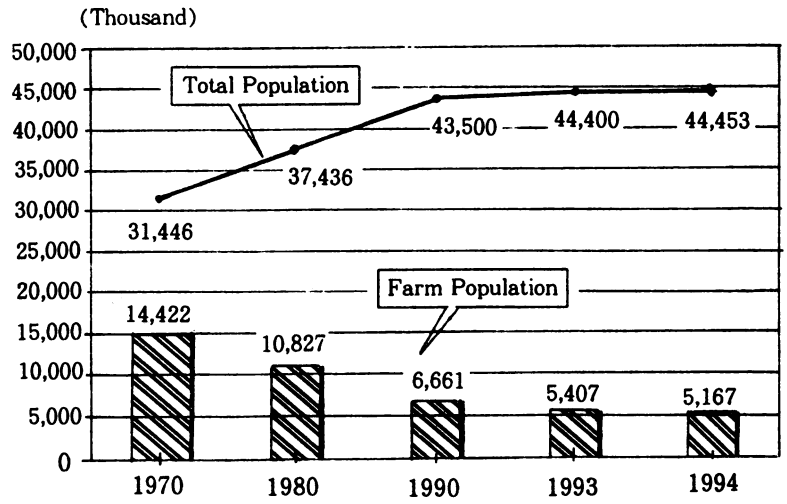
In 1993, among these part-time farmers, 236,000 were class I part-time farmers whose agricultural income is more than 50 percent of total annual income. The remaining 371,000 farm households were class II farmers depending on agriculture for less than 50 percent of their income. However, off-farm activities are scarce and limited, as can be seen by the ratio of off-farm income to total farm income which remained stable at about 30 percent for decades.

2. Farm population

Decreasing farm population

Korea's farm population stood at 5.2 million persons in 1994, or about 12 percent of the total population(Figure 6). While the total Korean population has expanded rapidly, almost doubling in the last 30 years, farm population has declined sharply since the 1960s due to industrialization and urbanization. Total Korean population has increased from 32.2 million in 1970 to 44.4 million in 1993, while farm population dropped from 14.4 million to 5.4 million over the same period. The 1995 farm population is expected to reach 5.0 million. On the other hand, labor force employed in the agriculture in 1993 accounted for 14.8 percent(2.9 million) of the total labor force(19.2 million), down slightly from 16 percent in 1992.

Figure 6. Farm Population Changes



The rate of farm depopulation is expected to continue, and may even increase. As a result of the decreases in the total farm population, many changes have occurred in the agricultural sector, including labor structure, crop intensity, farm wage rate, mechanization and other input factors. Farmers have migrated to the city, seeking positions with higher pay. For those who leave farming, agriculture appears to be less attractive.

However, from the urban dweller's point of view, this migration creates certain pressures since it is seen as a source of urban problems, such as housing, water, traffic, education and sewage problems. This off-farm migration seems to be a normal phenomenon in other countries. It may be a natural "pull" from higher wages in the industrial sector. In a sense, the movement can be regarded as a contribution by the agricultural sector to the development of the non-farm sector.

Annual migration of about 400,000 persons

According to Figure 5, during the period 1970-1992, the agricultural sector contributed about 400,000 persons annually to the non-agricultural sector, including a relatively high proportion of young men and women. Part of the migration is explained by farm boys seeking to marry non-farm girls. Inadequate job opportunities and relatively low income levels were the major reasons for the migration.

The problem, however, is that the rate of depopulation is expected to continue to grow. The speed of depopulation in rural areas is so fast that the current out-migration from agriculture is expected to continue for several years and mainly affecting the younger generation. If this trend continues, there may be a serious shortage of labor in rural areas, and possibly, a reduction in agricultural production. It would exert a substantial negative effect on the agricultural sector. Labor shortages in rural areas could, however, be offset by increased mechanization, but this

could mean a substantial demand for agricultural machinery. It also suggests that further mechanization and further effective land use will be necessary if production is to be maintained.

Aging of the farm population

Due to the exodus of rural people from farming, the farm population has aged rapidly. The decrease in the farm labor force has also resulted in greater participation by the elderly and women, a phenomenon which has become one of the most difficult issues facing rural areas. In 1970, 53.8 percent(7.8 million farm) were under the age of 20(Table 4). This proportion had decreased to 31.5 percent by 1990. Only 26.9 percent(1.6 million farm) of farmers were under 20 in 1993. This means that farming does not appeal to the young age groups.

Table 4. Farm Population Changes by Age

	1970	1980	1990	1993	1994(p)
	·····1,000·····				
Farm popilation	14,422	10,827	6,661	5,407	5,167
Percent of total	44.7	28.4	15.5	12.3	11.6
Under 20	7,768	4,914	2,104	1,457	NA
% of farm population	53.8	45.3	31.5	26.9	NA
20-49	4,404	3,701	2,259	1,679	NA
% of farm population	30.5	34.1	33.9	31.1	NA
50-59	1,107	1,074	1,111	1,004	NA
% of farm population	7.6	9.9	16.6	18.6	NA
60 and more	1,143	1,138	1,187	1,267	NA
% or farm population	7.9	10.5	17.8	23.4	NA

Source : MAI(1994).

About 42 percent of the agricultural labor force was aged 50 and older in 1993 against only 20.4 percent in 1980 and 15.6 percent in 1970. The percentage of farmers over 20 and under 50 was only 31 percent of the total labor force in 1993. The proportion of young farmers has therfore decreased while that of older farmers has increased. It could be said that the agriculture and rural society in Korea are supported predominantly by older people. These trends pose a question of how successful agricultural policy will be adopted by the elderly farmers is unclear.

Women's increased participation in the labor force

In addition to the increase in elderly farmers, the number of women in the labor force has grown slightly in recent years. In the 1994, women accounted for 51.8 percent(2.7 million) of the total farm population, against 50.0 percent(5.4 million) in 1980. The age distribution varies over time and shows different characteristics. Of the total woman population, the percentage of ages over 60 stood only at 8.8 percent in 1970, while it increased to 11.6 percent and 25.0 percent in 1970 and 1993, respectively. Also the corresponding proportion under 20 was 51.5 percent in 1970, while it has fallen continuously to 43.6 percent in 1980 and 28.1 percent in 1992. This means the ratio of old women-farmers is increasing very rapidly, and it suggests a shortage of young entrants.

3. Arable land and farm size

A. Constant agricultural area

Land is a basic resource for agriculture, and is sometimes a symbol of wealth or satisfaction. In Korea, land has more meaning than simply a resource for agricultural production. Land holding is an integral part of the Korean mentality. Thus, any attempt to change the land system receives a cool reception. Farmers, as well as urban dwellers, view land as an asset, so they want to keep the land in preparation for increasing

property and their retirement. Koreans have a special interest in the land system and place a very high value on land. This attitude has become a major restraint hindering the flexible use of land. In fact, several trials for the versatile use of land have failed through serious opposition from land owners.

As noted earlier, of the 9.9 million hectares of land area, approximately 20 percent, or 2.0 million hectares are cultivated. Another 80 percent of the total land is mountainous which restricts its use for cultivation. In addition, urban and industrial encroachment, and conversion of cultivated land to other uses have increased due to industrialization. Much of the land area is suitable only for trees, and virtually almost all of it is mountainous or hilly uplands. The total land area has remained relatively constant for the past four decades, although there have been small changes.

In 1994, the proportion devoted to agriculture was around 20.4 percent of the total land area, while in 1965, it stood at 22.9 percent(Table 5). The land utilization ratio(it represent double cropping of the land) in 1993 fell to 110.4 percent, from 113.1 percent in 1990. Reasons for the decline include labor shortage in rural areas and lower profitability in farming.

Paddy fields, over 60 percent the cultivated land

Of the 2.0 million cultivated areas in 1994, about 62 percent, 1.3 million hectares, were paddy fields suitable for production of the principle crop, rice. The remaining 38 percent(0.8 million ha) was uplands. These proportions have remained largely unchanged since 1960, although the ratio of paddy fields to upland fields varies from region to region.

Table 5. Land Use Patterns

	Total land	Agricultural area	Forestry	Others/1
	..... 1,000ha(Percent)			
1965	9,843(100.0)	2,256(22.9)	6,614(67.2)	973 (9.9)
1970	9,848(100.0)	2,298(23.3)	6,611(67.1)	939 (9.6)
1980	9,899(100.0)	2,196(22.2)	6,568(66.3)	1,135(11.5)
1990	9,926(100.0)	2,109(21.2)	6,476(65.2)	1,368(13.8)
1994	9,939(100.0)	2,033(20.7)	6,460(65.0)	1,416(14.3)

/1 : Includes residential, industrial,and recreational uses.

Source : MAI(1994). 1995 MAFF materials

In addition, most farms in Korea have several parcels of land, and hence, a fragmented farm structure. The potential for developing cropland is limited, judging from past trends, and increasing demand for other land uses. It is not surprising that Korean farms are small because of the limited availability of land and the number of farm households.

Land for non-agricultural use

The demand for land from other uses such as residential, industrial, recreational, and highways has been increasing in recent years with industrialization. The percentage of agricultural land put to other uses increased from 9.9 percent in 1965 to 14.1 percent in 1992, and the trend is likely to continue. During the period of rapid industrialization in the 1970s and 1980s, farm land continued to be converted to other uses at the rate of about 10,000-15,000 ha annually. Government approval for agricultural land conversion to other uses reached 12,255 ha in 1992.

Since the 1980s there has been a specific effort to reverse this trend. To increase the total agricultural land, large-scale land development projects were undertaken at considerable cost to the national budget. The results to date have been partly offset, however, by the reclamation of

agricultural land. These large-scale projects have been undertaken not only for the purpose of increasing production base, but also for expanding the land base for industrial, housing, highways, and other needs.

B. Small farms averaging little more than 1 hectare

As stated previously, the cultivated agricultural area in 1994 was about 2.0 million ha, 20.4 percent of Korea's total land mass of 9.9 million ha. A relatively constant agricultural area of 2.0 million hectares combined with a large farm population has resulted in an average farm size of 1.3 hectares.

The small-size farm remained almost unchanged since the 1960s, although the ratio of paddy field to upland field varies from region to region. In 1970, the average cultivated area per farm was 0.9 hectare. There was a marginal increase to 1.0 hectare in 1980. Per farm cultivate area in 1994 was 1.3 hectares, and expected to remain unchanged in the near future. Given the limited arable land and the number of farm households, it is not surprising that Korean farms are very small. The average size of the Korean farm is a sharp contrast to other countries, for example, the 1992 average farm size in Canada was 231 hectares, 186 hectares in the US, 29 hectares in France, 19 hectares in Germany, and 9 hectares in Switzerland.

Most farmers cultivate less than 1 ha

In 1993, about 60 percent of all farms had less than 1 hectare, 29 percent had between 1 and 2 hectares, and 12 percent had more than 2 hectares(Table 5). Relatively few farms exceed 3 hectares, the legal limitation for farm size. Small size has been a major contributor to the problem of Korean agriculture. Compared tc the 1970 distribution of farm size, the percentage of farms with less than 1 ha has declined by 5 percent. Within the same period, the proportion of farm households with 3 hectare

of more has increased from 1.4 percent to 3.1 percent. The small farm size has been a major contributor to some of the current problems associated with the agriculture sector.

Three hectare land holding limitation

The predominant small farms in Korea is a direct result of the land reform policies that were implemented in 1949. In 1949, a Land Reform Act was put into place to limit farm holdings to 3 hectares and to prohibit tenancy of farm land. The principle underlying the law is to ensure that every farm person has an equal opportunity to become land owners. The 3 hectare limit was considered to be the maximum acreage that is feasible for one household to farm, given the technology and economic conditions at the time.

While the Land Reform Act has achieved its goal in terms of an equitable distribution of landownership, its role has been more debatable with respect to the effective use of land. Some believe that the current system acts as an impediment to productivity and inhibits potential gains from economies of scale in certain agricultural sectors. It is now almost 40 years since the land law was enacted, and debate continues on the "pros and cons" of the ceiling limit. Some advocate its complete abolition; others propose an adjustment of the ceiling. The discussion of the land system is expected to continue, however, since a consensus has not been reached. Many people nevertheless think it would be desirable to amend the original law and, in particular, to relax the limitation.

Numerous studies have documented the land system in Korea. Most suggest that three hectare farm size limitation should be reviewed and adjusted upward, and farm land rental should be permitted within a limited area, for example, to 20 hectares. While it is impossible to specify the optimum level of farm size, a number of studies have been carried out over recent years which suggest that a farm size of 1.5-2.0 hectares may

produce the lowest average costs for each cropping system(Moonam, Chung, Ph.D thesis). The optimum level of size depends on several factors including the usage of machinery, location of farm land, and labor force available, as well as other economic factors.

Increasing tenancy

Although the Land Reform Act made it illegal to rent land for farming, loopholes have resulted in an increase in farm tenancy. The proportion of tenancy is expected to rise to about 40 percent of total agricultural land by 1993, from around 21 percent recorded in 1980. In addition, if the partial tenant farms were included, the proportion would be higher. Some believe that farm tenancy may have reached 60 percent in 1992.

The rapidly increasing tenancy system is mainly caused by a labor shortage in rural areas. As off-farm migration takes place, hectares available for farmers to rent or purchase will increase. For the moment, rent in rural areas is still too high for all farmers and land is expensive to purchase. In general, small farms earn low returns and are not a viable investment at the current high land prices. This is reflected in the area of idled land, which reached 68,900 ha(3.3 percent of the total) in 1992.

Recently, there has been an increase in the number of farms with more than 3 hectares. A modest process of consolidation of very small farms is taking place. This is in part a response to the depopulation of the rural area and the increasing availability of farm machinery. Also, the recent revision of the Land Reform Act provides further expansion of land ownership up to 20 hectares or more within designated zones known as Agricultural Promotion Zones.

C. Agricultural Promotion Zones

According to the recent agricultural structure adjustment policy established in 1992, the government will designate "Agricultural Promotion Zones" which will replace the "absolute and relative" land system. Until now restrictive land use regulations remain the most significant problems for the improvement of the agricultural sector.

Some of the present regulations and limitations will be relaxed according to the new system. Self-employed farmers may be allowed to own up to 20 hectares of land within the newly designated Agricultural Promotion Zones. They will benefit from the relaxation of land holding, and approval to own up to 20 hectares. Further modifications to this Agricultural Promotion Zone plan is being considered which would ease regulations or possession and cultivation of land.

By the end of 1992, about 1 million hectares(49 percent of total land), 92 percent of the total planned area, were designated as agricultural promotion zones. Future public investment in the agricultural sector, including land reclamation, production base enlargement, irrigation, mechanization, and marketing facilities will be focused on the area of agricultural promotion zones.

Despite such modifications of the land system, a number of regulations still remain which limit the possibility of using farm land for other purposes. Farm landowners, for example, must obtain the permission of the local government in order to transfer farm land to other uses(except in certain areas), and non-farmers are prohibited from holding farm land, etc. Land use regulations have been a major problem in the past decades and it has been again a problem in recent years.

4. Farm income

The 1993 Farm Household Economy Survey showed that the average farm income rose by 16.7 percent, from $US 18,407(14.5 million Won) in 1992 to $US 21,091(16.9 million Won) in 1993(Table 6). Grain crops

represent one of the most important sources of income for farmers in Korea. Both crop and livestock revenues rose considerably. Farm incomes were up for two reasons. First, yields in vegetables, special crips, and fruit were higher than the previous year. Second, livestock receipts were increased despite a decrease in cattle and pork prices. Revenue from speciality crops was up 25.6 percent in 1993 and has been the preferred crops in recent years.

Table 6. Farm Household Incomes

	Total(A)	Agricultural income(B)	Non-agricultural income(C)	Ratio(C/A)
	..... $ US			Percent
1970	686	520	166(NA)	24.2
1980	4,378	2,853	1,525(NA)	34.8
1990	15,595	8,859	4,108(2,717)	25.8
1993	21,091	10,500	6,280(4,132)	29.8

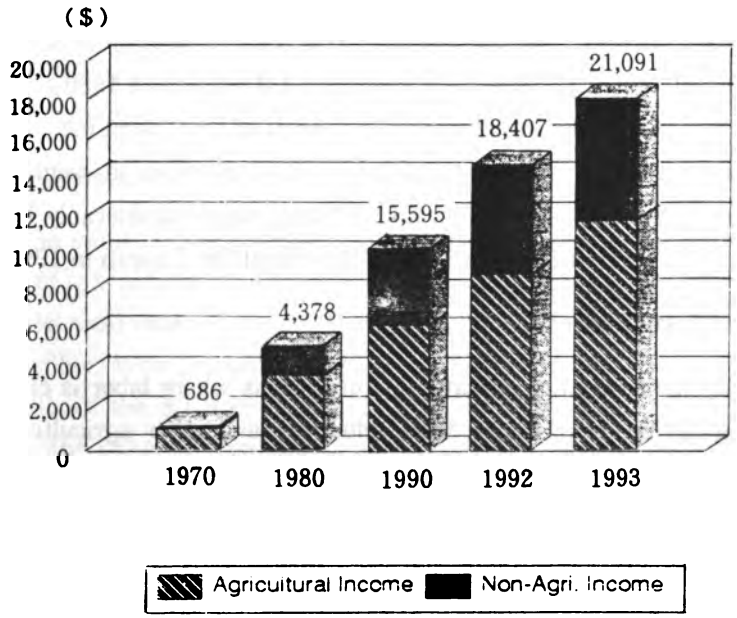
Source : MAI(1994). Note: Figures in parenthesis are transferred income. Since 1992, the composition of non-agricultural income has been changed. Transferred income has been taken out from the non-agricultural income category. In 1993, of the total farm income($ US 21,091), 20.4 percent($ US 4, 312) were transferred income. Figures are computed on the basis of the annual average exchange rate for each year

High dependence on agricultural income

One of the major objectives of agricultural policy is to increase farm income from agricultural and non-agricultural activities, and thereby close the gap in income between farm and non-farm workers. The striking features of Korean farm households is their high level of dependence on agricultural income. Farm incomes still depend heavily on agricultural income, which represented 49.8 percent ($ US 10,500) in 1993(Figure 7).

Agricultural farm income increased 14.6 percent to 11 million Won (but declined in terms of $US due to a depreciation of the Korean Won) in 1993 mainly due to the expansion of gross revenues in the vegetables, specialty crops, livestock and fruit sectors and a relatively slower growth of farm costs through mechanization. Agricultural income continues to be of major importance to total farm income, and the high dependence on agricultural income is expected to continue in the future if current type of farming prevails.

Figure 7. Composition of Farm Income



Stable non-farm income ratio of around 30 percent

Non-agricultural income increased to $US 6,280(5 million Won) in 1993, or 29.8 percent of the total. Non-farm income includes income from off-farm jobs, non-farm business, retirement, interest and dividend,

and all other sources of income including commerce, labor earnings, wages in factories and remittance from family members in urban regions. Farm households frequently supplement their income through non-agricultural employment during slack seasons. The relatively high percentage(29.8%) increase of off-farm income in 1993 was due to the significant increase in wage and salary earnings from secondary jobs, as a result of the establishment of rural factories.

Although the development of the Korean economy in the last decades increased labor opportunities and incentives for off-farm work in rural areas, non-farm activities have been small, and have risen slowly over the last two decades. The ratio of non-farm income to total farm income was 24.2 percent in 1970, while it stood at 34.8 percent in 1980 and 29.8 percent in 1993, remaining at about 30 percent of total farm income over the past decade. On the other hand, non-farm incomes in neighboring countries, for example, in Japan and Taiwan, were considerably higher, reaching 86.2 percent for Japan and 64.2 percent for Taiwan in 1992.

Rural industrialization

Many industries are operated in rural areas where labor is cheaper, including agribusiness, crafts, food industries, and other agricultural related industries. These rural industries were established mainly for the purpose of dispersing urban factories and the government has designated a number of rural industrialization belts where many of the rural factories are operated. Most of the factories have relied on government support policies, which include special tax exemptions, low rates for loans, and certain incentive measures. By the end of 1993, about 3,392 firms were doing business in rural areas, most of which were producing traditional craft products, food materials, and other general craft products.

5. Capital, debt and equity

A. Capital

The capital resource base of any country is complex. In general, two major categories, capital stock of farm real estate, and the value of livestock and poultry are used to explain the capital sector. In fact, part of the capital is land-saving, another part is labor-saving, while a third part is relatively neutral with respect to land and labor. Korea's capital base includes breeding herds for producing meat and poultry products, orchards, mulberry plantations, cocoon producing facilities, vinyl house facilities, agricultural buildings, etc. It is therfore difficult to accurately assess the total value of Korea's agricultural capital. However, the approximate value of the total capital can be obtained on the basis of the value of farm assets.

Farm assets

The value of the average farm household's assets was about $US 165,976(133 million Won) in 1993. There were about 1,592,000 farms. Thus the total value of farm household assets was about $US 264 billion (212 trillion Won), depending on the exchange rate(802 Won per dollar in 1993). Of the $US 264 billion(212 trillion Won), some 89 percent represents the value of fixed assets such as land and buildings. Part of the reason for this increase in asset value lies in the increase of real estate values. From 1980 to 1990, the sales index of farm households increased from 53.3 to 114.6, on the basis of the 1990 index of 100. Liquid assets account for only 3.3 percent. The remaining 8.0 percent represents savings and other deposits.

The asset position of farmers is another measure of financial health. With the increase of the farm income level, average assets per farm have also increased. In 1993, they rose to $US 165,976(133 million Won), up

15.2 percent from the previous year. Of the total, 88.3 percent($US 129, 572) were fixed assets, 3 percent($US 4,432) intermediate assets, and the remaining 8.7 percent($US 12,714) financial assets. The increase in asset value also reflects increases in the value of farm land and buildings.

Farm assets are both a source of income and a stock of capital. Agricultural machinery has always accounted for an important source of farm assets, but it is often difficult to estimate its value because of depreciation. Capital accumulation will increase as fast as the growth of income level. The additional rise in farm income level will encourage the use of more equipment, and investment will increase in the livestock, vegetables, and fruit sectors. Investment in construction and operation of water and water-related facilities is also an impoortant source of capital accumulation in Korea. Another interesting point is that agricultural investment is shifting away from basic foodstuffs toward high value products, including livestock, fruit, and some vegetables.

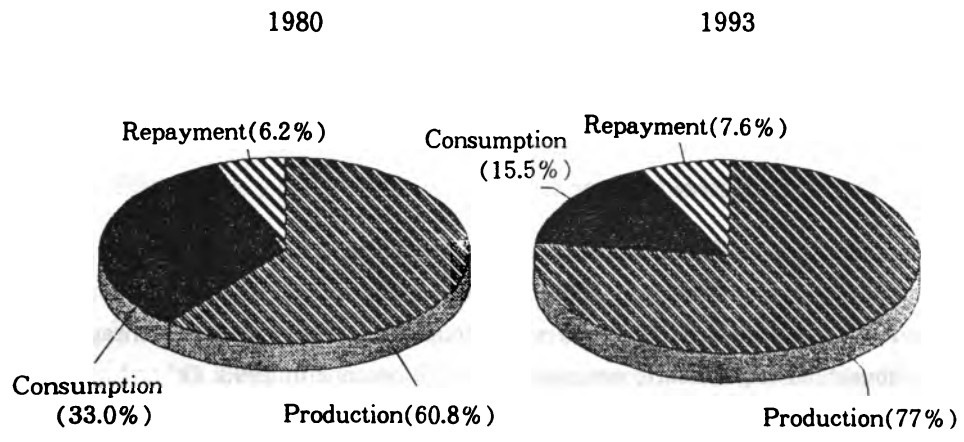
B. Farm debt.

In 1993, the average debt per farm was $US 8,507(6.8 million Won), a 20.1 percent increase from the previous year. Of the total, 91.8 percent($US 7,810) were borrowed from a credit institution(almost exclusively NACF) and 8.2 percent($US 698) from private sources. Substantial changes in farmer's credit source were noted between the 1980 and 1993 credit surveys. The 1980 survey showed an average borrowing of $US 5,511(339,000 Won), with 51 percent supplied by institutional credit sources, and the remaining 49 percent from private sources. However, in 1993, institutional borrowing accounted for 91.8 percent(Figure 8). It appears that farmers have been turning toward institutional credit. Most of the farm debt has been used for production purposes. Some 77 percent of the total debt had been used for production-oriented activities

in 1993. The remainder was used for household consumption and repayment of original debt.

Chronic farm debt has long been a serious problem in Korea. Many policies and programs, including the farm income support policy, have been implemented to alleviate farm debt. A farm debt relief program was carried out in 1988 in order to alleviate farm debt. Farmers with chronic debt were partially exempted from their debt in line with provisions made by the parliament. Assessment of this debt-exemption farm policy continues to be controversial.

Figure 8. Composition of Farm Debt



C. Farm equity

Equity represents the value of farm assets deducted from farm debt. In 1993, the level of farm equity stood at $US 157,451(126 million Won), a 12.8 percent increase from 1992. The nominal level of farm debt

had been increasing annually, but this does not necessarily mean that there was a deterioration in rural living conditions. The debt-to-asset ratio provides an insight into the collateral security of loans, the relative indebtness of the farm business, and the risk level shared by the lenders. This ratio had fallen to 5.1 percent from 4.9 percent by the end of 1993. The ratio of debt to equity also declined to 5.4 percent from the previous year's 5.1 percent. The debt to asset and debt to equity ratios showed that average rural living conditions had improved.

Although the price of most agricultural products increased in recent years, many farms experienced financial difficulties. The declining profitability of agriculture which has led to a fall in the level of real farm income has resulted in a depressed attitude. The principle factor behind these poor financial results was the fall in the 1993 production levels due to bad farm conditions. The impacts of the Uruguay Round agreement is expected to have negative consequences for the agricultural sector.

D. Farm household expenditures

Farm households' expenditures increased by 21.5 percent to $US 15,206(12 million Won) in 1993, against $US 12,748(10 million Won) in 1992. Expenditures for food still occupied an important percentage of household expenditure, accounting for 22 percent in 1993. Other housing costs rose to 15.0 percent in 1993, due to the increase in rural expenditures including house improvement costs, donations for marriages and funeral services, etc. Expenditure on education rose sharply from $US 325 (200,000 Won) in 1980 to $US 1,219(862,000 Won) in 1990. In 1993, it stood at $US 1,713(1,374,000 Won).

This high level of expenditure on education has become an important cost burden for farm households but it reflects rural farmers' concern for education and could be beneficial for farm labor flexibility. According to the 1993 Farm Household Economy survey, the average farm household

possessed one color television set, a refrigerator and a telephone. The holding ratio of color television sets increased sharply from 1.3 units per 100 household in 1980 to 123.6 units in 1993. The holding ratio of cars increased to 20.7 units per 100 households from 5 units in 1990.

Farmers' concern is now turning to values of the condition and situation which affect the quality of rural life. A direct means of upgrading the quality of rural life is increasing per capita agricultural incomes. Per capita incomes can be increased by several methods, for example, increasing the value of agricultural production, decreasing costs per unit, and through the operation of various government programs. In addition, farmers also have become more interested in better medical, health and sanitation facilities, cultural activities, educational activities, environmental quality, and investments in their general welfare.

6. Food consumption

A. Basic dietary patterns

Korean food is spicy and varied. Koreans use many pickles and fermented foods. Korea has developed a unique food culture, depending mainly on rice, processed vegetables(mainly pickled Kimch) with fish as the side dish. Given the relatively narrow range of food produced, the Korean diet has centered predominantly on rice, the main dish. Thus, a typical Korean diet tends to have a much higher carbohydrate level and a lower level of fats than the diets in Western countries. Other food grains have been added as a supplementary for rice.

An average meal provided calorie intake of 2,908 Kcal energy in 1992. Although rice is most preferred, many households have to buy other food grains, mainly because of relatively low price levels. This food consumption in Korean diet has changed substantially in the late 1970s and thereafter. As incomes increased, Koreans have expressed a strong

preference for meat, vegetables and fruit. However, rice remains a principle food item. Between 1980 and 1990, the daily calorie intake in Korea increased by about 15 percent and the consumption of meat increased by 58 percent. Underlying these changes in Korean diet were sizable declines in the consumption of rice, barley, potatoes and other carbohydrate grains. For rice, there was a decline from 1,234 Kcal in 1980 to 1,149 Kcal in 1992, and a corresponding increase in the consumption of meat, milk, and fruit.

Notwithstanding this diversification, the Korean diet is still high in carbohydrates and low in fat. Most of the calorie intake has traditionally come from cereals, with rice accounting for about 41 percent. Non-carbohydrate source of calorie supply are gradually increasing. In 1992, out of the total per capita calorie intake of 2,908 Kcal, about 60 percent(1,718 Kcal) was provided by cereals(almost exclusively rice, 1,149 Kcal), 5.7 percent(168 Kcal) by meat, and 3.8 percent(113 Kcal) by vegetables. The increasing intake of animal protein and fats have been noticeable since the 1980s. The intake of livestock products has continued to increase, from 49 Kcal in 1970 to 91 Kcal in 1980 and 168 Kcal in 1992.

B. Increase in Western-style food consumption

Today, Korean consumers spend about 23 percent of their income on food. Since the 1980s, Korean diet patterns have changed significantly in terms of volume and quality. As incomes have grown, the pattern of food consumption has shifted from carbohydrate, such as rice to a more diversified diet with plenty of livestock products, vegetables, fats and fruit. An additional cause for changes in Korean dietary pattern is the westernization of the diet. Convenience and quick preparation have become more important, increasing the consumption of wheat flour and the prevalence of processed foods.

Per capita foodcrop consumption has been decreasing annually. In

1970, the total per capita grain consumption was 219.4 kg, and it decreased to 167.0 Kg in 1990, and 162.1 Kg in 1993. Per capita rice consumption also seems to be on the decline, peaking at 136.4 kg in 1970 and declining thereafter. In 1993, per capita rice consumption stood at 110.2 kg, while in 1994 it was expected to fall to 108.3 kg,a 1.7 percent decrease from 1993. This is in keeping with the trend of changes in consumption pattern and higher incomes. Consumption of barley was also reduced to 1.5 kg in 1992, but it increased to 1.7 kg in 1993. Per capita wheat consumption has increased continuously from 26.1 kg in 1970 to 29.9 kg in 1993, and is expected to continue to grow with the westernization of the Korean diet.

Meat consumption in Korea has risen sharply as a result of increased demand for meat. Per capita meat consumption, 24.3 kg per year in 1993, almost doubled between 1980 and 1993(Table 7). Beef consumption in Korea increased almost ten times over the past decade. Per capita beef consumption increased rapidly, from 1.2 kg in 1970 to 5.3 kg in 1993. Demand for beef is expected to increase in the future in line with higher incomes. Consumption of pork and chicken is also expected to increase to some extent. In 1993, per capita consumption of pork and chicken were 13.9 kg and 5.5 kg respectively, up from 13.4 kg and 5.3 kg of 1992. Both were forecast to increase in 1994 at 14.0 kg and 6.0 kg, respectively. Per capita milk use more than quadrupled during the past decade, from 10.8kg in 1980 to 45.0 kg in 1993.

The increase in meat consumption requires a considerable amount of meat imports from abroad, especially for beef. In addition, the consumption of high-value products such as processed fruits and vegetables, prepared food and confectionery goods, has increased rapidly as Korean consumers became more affulent, and it is expected to continue in the future.

Table 7. Food Consumption Per Capita

	1970	1980	1990	1993
	..... kg			
Grains	219.4	195.2	167.0	162.6
Rice	136.4	132.4	119.6	110.2
Barley	37.3	13.9	1.6	1.7
Wheat	26.1	29.4	29.8	29.9
Corn	1.1	3.1	2.7	3.1
Soybeans	5.3	8.0	8.3	7.8
Potatoes	10.2	6.3	3.3	3.4
Other crops	3.0	2.1	1.7	3.2
Vegetables	59.9	120.3	132.6	133.6
Chinese cabbage	19.8	47.6	46.9	48.3
Radish	19.0	31.0	26.7	22.9
Red-pepper	1.2	2.2	1.8	2.6
Fruit	13.1	21.8	41.0	47.2
Meat	5.2	11.3	19.9	24.3
Beef	1.2	2.6	4.1	5.3
Pork	2.6	6.3	11.8	13.9
Chicken	1.4	2.4	4.0	4.8
Egg	4.2	6.5	9.2	9.8
Milk	1.6	10.8	42.8	45.0

Source : MAI(1994)

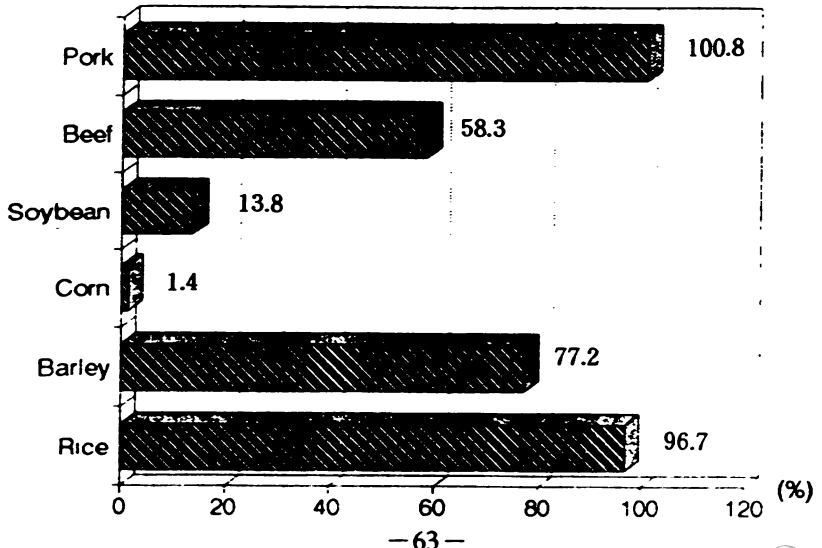
7. Self-sufficiency

Korea has sought to enhance the production of major staple foods such as rice and barley, and has achieved self-sufficiency in major staple food crops.It still depends, however, on imports for several agricultural products because domestic production can not meet the increasing de

mand for agricultural products. Korea was self-sufficient only in rice (102.7%) and chicken(100.3%) in the 1990-1992 period. Self-sufficiency was almost maintained in potatoes(98.7%), sweet potatoes(94.9%), garlic(99.8%), onions(98.7%) and some dairy products(96.5%) in the same period.

However, the total food self-sufficiency ratio fell to 43 percent in 1990, from 95 percent in the 1960s. Except for certain products such as rice, pork, and chicken, the self-sufficiency ratio has continued to decrease. The decrease in self-sufficiency was sharpest in wheat, corn and soybeans, falling from 27 percent, 22 percent and 89 percent in 1960-64, to 0.1, 2 and 20 percent in 1990, respectively(Figure 9). The major reasons for the fall in self-sufficiency have been the rapid increase in the livestock sector and comparatively unfavorable domestic farm conditions including lower quality, higher ash content and thicker husks(wheat), coupled with structural problems in the agricultural sector. This has resulted in a decrease in grain production which reduces self-sufficiency. A decline level of profits has also contributed to the decrease in grain production. This trend is highlighted in the wheat sector.

Figure 9. Food Self-sufficiency Ratio



The total grain self-sufficiency level has decreased steadily in recent years. In 1993, the total demand for food grains was 18.3 million MT, while the total domestic supply reached only 6.2 million MT, resulting in a total grain self-sufficiency ratio of 33.9 percent, a fall from 34.1 percent the previous year. In the case of rice, near self-sufficiency was almost attained in the late 1970s, except for certain years because of bad weather conditions. Until the 1970s, Korea had difficulty in maintaining self-sufficiency in rice. Later in the decade, yields continued to grow as a result of increased investment in rice cultivation and the government began to maintain self-sufficiency in rice. It reached almost 100 percent in the 1980s and over 100 percent in the 1990s. Excluding the demand for feed grain, the self-sufficiency ratio of food would stand at almost 70 percent in the early 1990s.

It would be difficult to set a given self-sufficiency ratio as a policy goal because domestic demand for food changes rapidly, and the supply situation is also uncertain. Attempts to attain self-sufficiency in food will be costly and will require the augmentation of resources, additional use of land substitutes and higher domestic prices to expand production and curtail consumption. Thus the self-sufficiency policy has now been recognized as being very expensive. However, many Koreans have expressed concern about the fall in self-sufficiency in food. They argue that if Korea utilizes its resources to almost full capacity, the self-sufficiency ratio of food crops could be increased.

III. Agricultural production

1. Farming patterns

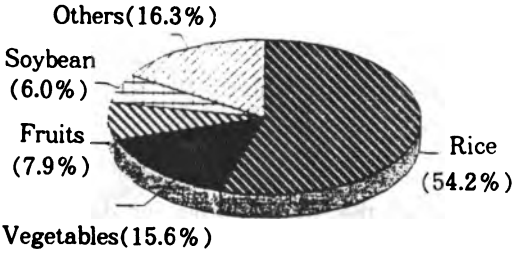
A. Multi-cropping farming system

Farmers in Korea produces a wide variety of products. In addition to rice, farmers cultivate other products such as barley, soybean, corn, and fruits and vegetables. Agricultural production in Korea is carried out primarily on small farms, and most farmers are engaged in multi-cropping, producing rice mainly on paddy fields. Perennials,and fruits and vegetables are produced on uplands.

In 1994, of the total 2.0 million hectares cultivated, about 54 percent was used for planting rice, mainly in the southern and western plain fields(Table 8). Vegetables accounted for the second largest share with 15.6 percent of the total area cultivated. The number of hectares of speciality crops increased to 6.1 percent in 1994. Special crops include sesame, peanuts, and rapeseeds. Barley and wheat accounted for 4.1 percent, pulses 5.9 percent, and fruit 7.9 percent.

Table 8. Breakdown of Cultivated Area by Commodity, 1994

Total crop land	2,033(100.0%)
Rice	1,102(54.2)
Barley & wheat	85(4.1)
Soybean	121(5.9)
Potatoes	35(1.7)
Fruits	161(7.9)
Vegetables/1	318(15.6)
Special crops/2	124(6.1)



/1 : Data of 1993

/2 : Includes sesame, peanuts, rapeseeds, etc

The cropping pattern in Korea can be defined in many ways, but there is a basic distinction between paddy cropping and upland cropping. In addition, a more detailed sub-classification of farming would be possible, according to climate conditions and geographical characteristics. For example, single cropping and double cropping. This pattern is the consequence of social, traditional, and geographical factors. The regional farming pattern is best understood by examining the administrative divisions in each region. Most of the agricultural statistics and regional farming patterns are expressed by the administrative division.

Paddy farming is located mainly in the south western region of the Korean peninsula, namely Chollabuk-do(province) and Chollanam-do, and focuses mainly on rice. The only region where rice is not relatively important is Cheju-do, the southern island of Korea. Paddy cropping patterns can be subdivided into two ways according to the feasibility of growing a second crop with rice in a given year; single cropping paddy and double cropping paddy. There are many upland crops and they are primarily cultivated in the eastern part of the peninsula, mainly in Kangwon-do, alongside other crops including barley, wheat, other grains, vegetables and fruit.

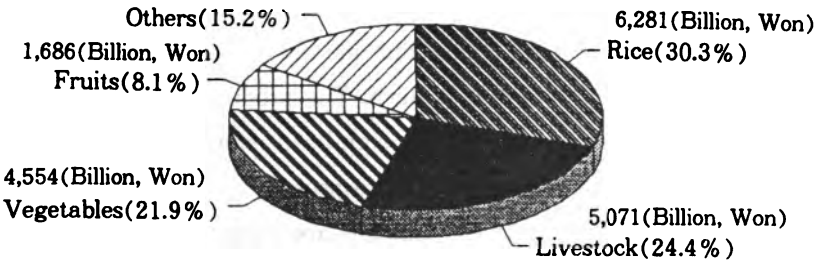
While rice dependent paddy farming has been the foundation of Korea's agriculture, relatively lower profits compared to other special crops, have made this crop less attractive. In fact, the farming pattern in Korea is expected to remain stable because farmers in Korea have few alternative crop options. Technical opportunities for new types of farms in Korea are great, but economic opportunities are far more limited, because about two-thirds of the total land area is classified as forest and nearly all the area suitable for development as paddy has already been developed. Moreover, a large proportion of government research funds has been invested in the rice industry, and this has resulted in high yields.

Since the 1980s, domestic production of major crops has been decreasing slowly, because land has been shifted to alternative crops or converted to other uses. The production of fruit, vegetables, and livestock have continued to grow as incomes rise. Rising incomes have created increased demand for livestock, vegetables and fruit. Although the agricultural sector has developed in several ways, the rice-centric paddy farming has remained almost unchanged for several decades and rice remains the dominant crop.

Pattern of production in value terms

The pattern of agricultural production in terms of value indicates similar trends. Figure 10 shows that rice was the largest Korean agricultural product accounting for 30 percent(6.3 trillion Won, about $US 7.8 billion) of total agricultural goods produced in 1993(20 trillion Won, about $US 25.8 billion). Livestock production was the second largest product in 1993, accounting for about 24 percent. This was followed by vegetables(22%), and fruits(8%).

Figure 10. Value of Agricultural Production



B. Rice-centric family farming

The characteristic of agriculture in Korea will be represented to an important extent by the dominance of the rice subsector. The dominance of rice is reflected in many aspects including the high level of food consumption,the area cultivated to rice and the high dependence of farm income on rice. Rice is also regarded as the symbol of the Korean agriculture and the Korean mentality. Most rice growing is carried out on small farms, although some is farmed by larger farmers. Rice is, therefore the basis of the Korean diet, and is of traditional and cultural importance to the Korean people. Since ancient times, ensuring sufficient food, especially a stable supply of rice, has been very important. Government intervention, therefore in Korea's rice policy has been extensive and has played an important role in supporting agricultural sector.

C. Changes in production pattern

Livestock, fruit and vegetables increasingly supplement cereal production. Their share in farm output has increased from under 29 percent to around 48 percent over the past three decades. Conversely, the share of grain has fallen from approximately 60 percent in the early 1960s to about 43 percent in the mid-1980s. Domestic production of fruit and vegetables are expected to increase due mainly to the growth in food demand and to changes in diet pattern. The production pattern of grain, fruit and vegetables are undergoing significant changes as a result of the move towards internationalization, especially the GATT agreement reached in December 1993. The changes are expected to have a depressing effect on the production pattern within the prices are higher than world prices.

D. Lack of resources but possibilities

The production capacity of Korea's agricultural sector cannot meet the demands of the population, the density of which is as high as 449 persons per square kilometer, resulting in importation of major agricultural products. There are many ways of increasing domestic agricultural production through increasing yields and increasing land, but requires considerable investment.

In sum, Korea does not have abundant land, labor, capital, and other resources on which to base its agriculture. The major resources have declined in absolute terms during the economic development period. Some of the decline in resources have been offset by increased mechanization. Despite limited resources, the production of rice has been maintained at a self-sufficiency level. This is primarily due to strong government intervention. Production of a number of other agricultural products still remain below demand. However, Korea does have (i) hard-working farmers capable of accepting changes, (ii) adequate land area and,(iii) new technologies. Therefore, effective use of resources will make it possible to achieve national goals for agricultural policy.

2. Grain production

Grain production in Korea is believed to have relative advantage due to favorable climate and fertile soil. Most of the crop land is used for grain production. The major crops are rice, barley, pulses, potatoes and special crops. Grain production in Korea has varied from year to year broadly in line with weather conditions and incidence of diseases. This fluctuating nature of agricultural production has become the main cause of price instability.

Total grain production in Korea has risen sharply, from 5.3 million MT in 1980 to 5.7 million MT in 1994(Table 9). Rice production has increased rapidly over the past decade while production of other crops, including barley, wheat, and soybeans, has fallen significantly. The 1994

grain harvest of 5.7 million MT was 3.8 percent more than in 1993. Total 1995 grain production in Korea is estimated at 5.8 million MT. Production of barley, wheat, sweet potatoes and soybeans were also reduced by the bad weather conditions and lower profitability. Grain production is expected to continue to decline in the future due to decreased acreage and declining profitability.

Table 9. Grain Production 1980, 1993-1994

	1980		1990		1993		1994	
	Production	Area	Production	Area	Production	Area	Production	Area
	..... Production(1,000MT), Area(1,000ha)							
Total	5,324	1,982	6,635	1,669	5,574	1,467	5,744	1,402
Rice	3,550	1,233	5,606	1,244	4,750	1,136	5,059	1,102
Barley	906	360	417	160	321	117	233	84
Wheat	92	28	1	0.3	1	0.5	2	0.6
Corn	154	35	120	26	82	20	88	21
Soybean	216	188	233	152	170	117	154	121
Potatoes	446	37	371	21	622	27	489	21
Sweet Potatoes	1,103	55	432	19	282	14	247	14

Source : MAFF Materials(1995)

A. Rice production

(i) Rice, the most important crop

Rice has been a part and parcel of the Korean culture, tradition, and mentality. Rice-centric paddy farming has been the core of Korean agriculture. It dates back more than 5,000 years and continues to be an integral part of the Korean agricultural policy. Since ancient times, ensuring a sufficient supply of rice for the population has been very important for

social and political stabilities. Food security for major crops has long been regarded as major policy objectives, because Koreans remember the deleterious effects of shortages of major staples under Japanese colonial rule and during the Korean War.

Food security is widely perceived as important for public welfare, and economic and political stability. Korean politicians believe that rice has been the basic subsistence food and they view a stable and sufficient supply of rice as directly related to people's livelihoods and to the security of the nation. In addition, the Korean mentality and culture have been based on paddy rice farming which requires considerable team work. Thus rice has strongly influenced the Korean way of life by maintaining the vitality of regional communities, preserving a unique regional culture and fostering a rich human contact with nature. Rice policies have so long been closely related to the general economy and have been regarded as very important for the Korean's decision makers. The importance of rice farmers as a political force in Korea is well known as was shown in the nation-wide demonstrations against rice imports in December 1993. Thus, rice has been historically the most important crop in Korea, and has always been treated as "special".

Profitability

For farmers, rice cultivation has many advantages: relatively high prices under the government purchase system, often 4-5 times that of world prices, repeated cultivation of the same field without a decrease in yield, and tolerance to heat and high humidity in the growing season in comparison to other crops. Profitability seems to be the major reason that farmers depend primarily on rice cultivation.

Consumption

The role of rice in consumption is no less important. The Korean diet has centered predominantly on rice, with other food grains, vegetables, meat, and fish acting as a side dish. Most of the Korean calorie intake has traditionally come from grain, with rice accounting for about 70 percent. The daily calorie intake depended predominantly on rice, about 40 percent in 1990. In addition, rice also accounted for as much as 30 percent of the food expenditure of urban workers until the 1980s and, despite the rapid economic development in the last three decades, this share has not drop below 20 percent. Rice-centric diet pattern is one of the characteristics of Koreans.

Environmental importance

Paddy fields play a role of preserving the natural environment. It stores rainwater and preserves underground water resource, thereby controls the flow of water by acting as a dam, and prevents erosion and floods. The environmental role of rice in Korea has been emphasized in recent years in conjunction with the emphasis of the relationship between agriculture and environment.

Predominant crop

Of the 1994 total crop land area of 2,033 thousand hectares, 54.2 percent(1.1 million ha) was planted to rice, most of which was grown on small family farms. Rice accounted for about 30 percent of the agricultural output value, and about 40 percent of farm receipts in 1993. There was little change in this feature of rice-centric farming of Korean farmers during the last thousand years. These aspects of Korean agriculture explain the reasons why the policy for the rice industry plays such a crucial role in Korea's overall agricultural policy. On the other hand, the rice price also has long been regarded as one of the leading indicators on which the price of almost all other commodities are based.

Therefore, rice has become a social good in Korea and rice policies have for so long been protected and isolated from international market forces. Reform in agricultural policies essentially means revising the rice policy. This creates a lot of difficulties as the rice policy has been the central feature of agricultural policy and the key instrument of agricultural protection. The feature of Korean agriculture will be decided by what happens in the rice sector.

Lack of efficiency

From an efficiency standpoint, rice-centric paddy farming poses some problems in Korea. An adequate cultivation area for rice in Korea is estimated to remain at around 0.1 hectares because of the irrigation facilities and territorial characteristics. Further enlargement in farm size is also limited to 3 hectares by law, restricting improved efficiency through economies of scale. Paddy lands are scattered here and there in small units.

In addition, rice is not economically competitive in the world market, and rice production costs are about 5 times more than in other countries. Overall, rice price support policies are very costly while rice consumption has been decreasing continuously with changes in dietary patterns. Rising income and population growth have created increased demand for livestock products, vegetables and fruit, as can be seen the fact that the share of non-grain products in total output has risen from under 30 percent to almost 50 percent during the past decades.

(ii) Planting and harvesting

Cultivated rice in Korea can be classified into two varieties on the basis of land use; paddy rice, and upland rice. Most cultivated rice is paddy rice and characterized by its round, short shape, and sticky consistency. Paddy fields can be filled with water as the crop requires, primarily from irrigation drains or from underground irrigation pipes. Most of

the water used in irrigation comes from rivers and lakes. This role provides an important part in preventing floods and erosions, as advocated by many agricultural economists.

Rice is transplanted during May and June, and harvested in the fall. Farmers decide which area and how much land will be planted on the basis of past experience, future expectations, and their neighbors' decision. However, recent trends show that most farmers make this decision mainly on the basis of their most recent experiences, due to the current shortage of labor and uncertainties in agriculture.

Harvesting is usually carried out in the fall, from September to November. Harvesting has been done almost entirely by machine. All rice havested undergoes changes in its physical characteristics before consumption. The rice hull remains on the grain after harvest. A common practice is to leave the rice in the unhulled form until it is marketed or consumed. Rice processing can be divided into two stages, hulling and polishing.

Most rice is used for human consumption, although some is used for industrial purposes. Consumers buy cleaned rice in small sacks from retailers. Most retailers sell several kinds of rice according to the degree of refinement(high, medium, and low). Rice consumption in Korea has decreased as incomes rise and the fall in rice consumption is expected to continue to some extent.

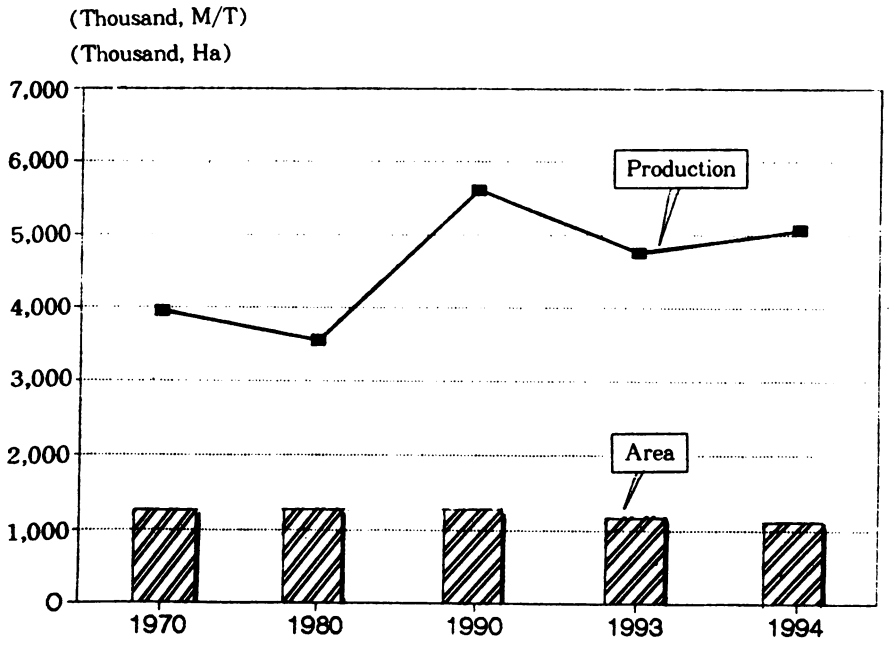
(iii) Stable production

Rice production in 1994 amounted to 5.1 million MT. Rice production, which normally represents about 85 percent of grain production, declined about 11 percent in 1993 to 4.8 million MT. But it increased to 5.1 million MT in 1994. Rice production in Korea has expanded rapidly in the last decades and the annual average production in the early 1990s has re-

mained at around 5.5 million MT. This average is marginally below the average between 1985 and 19990.

The drop in yields in 1993 was mainly attributable to reduced planting of the "Tongil" variety, which consumers considered inferior. The total area under rice cultivation in 1993 was 1.1 million hecates, a decrease of 4.2 percent from the previous year. The decrease in production was due mainly to bad weather which resulted in the lowest average yield since 1987 and partly to a higher drop in planted area(Figure 11). The government, in 1995, plans to target rice production at around 5.2 million MT.

Figure 11. Rice Production and Area Planted



Increase in rice production was attained mainly through active government policies including improved plant breeding, land enlargement, more extensive use of fertilizers, pesticides, and insecticides, as well as an increase in government purchasing prices. Bio-technology development, such as the introduction of new varieties of "Tongil" rice, also appears to an important factor in generating growth. In addition, the increased use of farm machinery and improved quality of farm land through irrigation, drainage, and land development have been responsible for the growth in rice production. Therefore, since the 1980s the annual production of rice has not fallen below 5 million MT, and it reached a peak of around 6.1 million MT in 1988. Since 1988 annual rice production has remained at around 5.2 million MT, most of which is paddy rice.

Increasing yields per unit

per unit yields have also increased continuously from 330Kg per 10a (one-tenth of a hectare) in 1970 to 451Kg in 1990. In 1993, it decreased to 418Kg. Although the planted area has remained almost constant at around 1.2 million hectares since 1970, yields have increased steadily. The introduction of high-yield varieties in the 1970s, and increasing use of farm machinery and improved quality of farmland through irrigation, drainage, and land development have increased rice yields.

The yields per 10a peaked at 481Kg in 1988 and since then have remained stable at between 440 and 480Kg, averaging 450Kg in recent years. Therefore, although the present rice cultivation structure compares favorably with other crops, there is scope for further improvement in the fields of effective management, extensive land usage, and application of advanced technology.

Stable rice cultivating area of 1.1 million ha

The area devoted to rice cultivation has remained almost constant

over the last decades, averaging between 1.1-1.2 million hectares. In 1970, it stood at 1.2 million hectares, while in 1994, it remained at 1.1 million hectares. This relatively constant area means that there is no other alternative crop than rice in Korean farming. In fact, almost all farmers are engaged in rice cultivation.

Rice consumption continues to decline

Rice consumption in Korea has been decreasing gradually since the early 1970s. Per capita rice consumption peaked at 136.4Kg in 1970 and has fallen thereafter. In 1993, it was 110.2Kg, and was estimated to fall to 107.0Kg in 1994 as incomes rise. Research shows that as incomes increase the demand for rice declines and the decrease in rice consumption is expected to continue in the future.

This decrease in rice consumption becomes a sharp contrast compared to that of other countries. In Japan and Taiwan, for example, rice consumption per capita in 1991 was 69.9Kg and 70Kg, respectively. In Korea the per capita rice consumption was 116.3Kg in the same period. Consumption of rice in both countries remains almost 60 percent of Korea's per capita consumption, reflecting a possible further decrease in rice consumption in Korea(Appendix 14). If the examples of Japan and Taiwan are relevant, consumption change in Korea will continue to some extent.

B. Barley production

The 1994 barley harvest also decreased, due mainly to lower profitability, lack of rural labor force, and less preference by consumers. Barley production in 1994 was estimated at 233,000 MT, as compared to 321,000 MT in 1993, a decrease of 27.3 percent(Table 9). The area sown to barley in 1994 was 84,000ha, which is about 28 percent less than in 1993(117,000ha). Barley yields and area are forecast to decrease in the future. In recent years, barley used for food purposes accounted for 5

percent of total food grain use and thus, barley's relative importance as a mojor crop has declined.

Until the 1970s, barley was regarded as a staple food and ranked second in importance in the Korean grain policy. At that time, barley mixed with rice formed the staple diet of farmers and low income workers because barley was relatively cheap compared with rice. Thus, barley was naturally included in the major staple crops category.

Declining barley production

In 1970, total barley production amounted to 26.2 percent(1.8 million MT) of total food crop production. However, in the 1980s and 1990s, the situation changed significantly due to the consumers' lower preference. Barley is considered to be an inferior product in Korean diet and thus less preferred by the consumers. Barley consumption, therefore, has decreased sharply from 37.3Kg per capita in 1970 to 1.7Kg in 1993. With rising incomes, the practice of mixing barley with rice has been dying out. In recent years, barley has been used primarily in livestock feeds and for malting. By 1980, barley production and fallen to 17 percent of total production, and in 1991, 5.4 percent. Barley has been perceived as a complementary crop rather than as a major food grain.

Barley production is also becoming a less preferred crop by farmers as they achieve higher returns in alternative crops. In recent years, vegetables and fruits have become the alternative crops. Barley is grown in the southern provinces as a winter crop and farmers have problems harvesting barley in time to plant a summer crop, such as rice. Barley continues to be a highly protected crop. About 70 to 90 percent of the barley producted is purchased by the government each year. In 1992, of the total barley production of 198,000MT, about 87 percent, or 172,000MT, were purchased by the government. In addition, barley imports are highly regulated; limited only to malting barley, for the purpose of protecting

farmers' income.

C. Wheat production

A minimal wheat production of 2,000MT

Wheat production accounted for only a small proportion of the total grain production. Production decreased sharply from 219,000MT in 1970 to 92,000 MT in 1980 and has continued to decrease in recent years to around 2,000 MT in 1993 and 1994 (Table 9). The area devoted to wheat cultivation in 1994 remained at 600 hectares, and is expected to continue to fall below 1994 level.

Between 1980 and 1992, the fall in acreage was notable. Wheat production in 1993 and 1994 are estimated to be less than 1,000 MT, a sharp decrease from the previous decades. The outlook for wheat production is expected to remain almost unchanged at less than 2,000 MT from 1994 onwards. Accordingly this caused Korea to import about 4.5 million MT of wheat in 1991. Korea has become a complete importer of wheat, with the wheat self-sufficiency ratio of nearly 0 percent. Since the liberalization of the wheat market in 1984, Korea has been almost totally dependent on imports.

Domestic wheat of poor quality

Korean agriculture is not well adapted to growing wheat, and its cultivation had almost ceased by 1990. Wheat in Korea is cultivated in upland fields and as a second crop in paddy fields which in summer are used to produce rice. Wheat is produced primarily for food purposes. Wheat cultivated in Korea is generally of poorer quality than imported varieties. Various factors are responsible for this poor quality including lower density, higher ask content and thicker husks. Thus wheat produced domestically is used mainly for making noodles.

Increasing wheat consumption

Wheat consumption in Korea showed a steady growth of 26.1Kg per capita in 1970 to 29.4Kg in 1980 and 30.9Kg in 1991. In 1993, it was almost 30Kg. During the 1970s and 1980s, the demand for wheat flour expanded because of the westernization of the Korean diet, population growth and income growth. Wheat consumed in Korea is divided into two categories: milling wheat and feed wheat. Milling wheat is supplied mainly by the US and its market increases steadily due to the increased demand for wheat flour by bakeries, restaurants, and consumers.

Feed wheat consumption increased sharply in the late 1990 and into early 1991 due to increased availabilities of cheap feed wheat on the world market. Consumption of milled wheat is on the increase with the adoption of western-style tastes in Korea. Feed wheat consumption increased sharply in late 1990 since prices have been low relative to corn.

D. Corn production

Corn is the major Korean feed grain and is widely used in both the foodprocessing and feed sectors in Korea. Corn is mainly grown in the eastern peninsula of Korea, Kangwon province. Corn production has continued to fall over the past decades due to low returns, from 154,000 MT in 1980 to 88,000 MT in 1994 (Table 9).

Corn production continues to declineIn 1994, corn production increased to 88,000 MT from 82,000 MT in 1993. Total area devoted to corn cultivation remained around 21,000 hectares in 1994, almost at the 1993 level. Corn area is expected to remain stable for a long time because farmers in the corn area have few crop options. Domestic corn production supplied only 1-2 percent of total demand, with import accounting for 97 percent of corn use in 1991. Corn is also one of the few crops supported directly by government purchases. The NACF purchases all corn offered by farmers and sells it to feed millers or to companies. In the feed sector,

corn compete with a variety of other feed ingredients, especially feed wheat. Feed manufacturers have to buy domestic corn from the NACF at a price higher than the import price. In general, feed millers prefer feed wheat to corn for cattle and swine feed due to the higher protein content. Use of corn in the processing sector continues to grow rapidly, but use of corn in the feed sector is highly dependent on price competition.

E. Soybean production

Soybean use in Korea is predominantly for human consumption. Soybean production declined gradually over the past decade, but in recent years, it has remained stable at about 160,000 MT. In 1970, total soybean production stood at 232,000 MT, while in 1980 it recorded 216,000 MT. The 1994 soybean production from a total acreage of 121,000 hectares was estimated at 154,000 MT as compared to 170,000 MT in 1993, a decrease of 9.4 percent (Table 9). Soybean consumption in the foods sector remains relatively stable, but consumption of soybean oil is expanding as consumption of other fats and oils increased. The government emphasizes soybean production through high price support, budgetary assistance, and border measures. Korea's steady growth in soybean use reflects a growing demand by the feed and food sectors.

F. Potato production

Potato production in 1994 reached 489,000 MT, a 133,000 MT decrease from the previous year(Table 9), due mainly to decrease in planted area. The area planted to potatoes was 21,000ha in 1994, a decrease from 27,000ha in 1993.

However, the 1994 acreage represents a significant fall from 16,000ha in 1980. In the past, consumption of potatoes fell due to lower preference and rising incomes. In recent years, however, increased concern about potatoes has expanded potato consumption and production. Korea's 1994 sweet potato production was reported at 247,000 MT, a decrease at

about 12 percent from the 1993 level of 282,000 MT.Future production of these crops will be affected by the results of the GATT agreement. Starting from 1995, the year that the liberalization program is to begin, severe competition from foreign products is anticipated. Foreign products are expected to have relative advantages over the domestic products in the areas of price, quality and marketing. The ongoing trends such as decrease in profitability, rising costs, and lack of labor will also contribute to this situation.

3. Livestock production

Cattle raising is a good source of farm income in Korea. Until the 1960s, animal power was important in farming operations. In the 1970s, with the development of mechanics, the importance of animal power declined sharply and today it has almost lost its role. Farmers nowadays breed cattle for sale as a normal commodity. For farmers, calves are an important source of income. Livestock production has shown a continue rise over the past decades, from 423,000 MT in 1980 to 930,000 MT in 1992. The general rising trend in the livestock production continued, with beef production rising about 1 percent, pork 8.1 percent and chicken 8.2 percent. The number of cattle, pigs and poultry have also increased.

Number of livestock

The number of cattle rose sharply in the early 1980s, and by 1991 it was 2.3 million head. The total number of cattle in 1980 stood at 1.5 million head, and had jumped to 2.1 million head by 1990(Table 10). In 1992, cattle stocks increased 11.3 percent to a total of 2.5 million head compared to 1991. Forecasts predicted a total of 2.9 million head in 1993 and 1994. Dairy cow numbers in Korea were 552,000 head by 1994, 19 percent of total cattle number. The total number of pigs reached around 6.0 million in 1994, while the number of poultry stood at 80 million in 1994.

A further expansion in the number of cattle, swine and poultry is expected in the 1990s. By the end of December 1991 the Korean poultry flock had remained at 75 million birds. In 1994 poultry numbers increased to 80 million.

Table 10. Livestock Numbers and Meat Production

	Livestock Numbers				Meat Production			
	Cattle	[Beef Dairy]	Pigs	Chicken	Total	Beef	Pork	Chicken
	..... 1,000 Head				..... 1,000 MT			
1980	1,541	[1,361 180]	1,784	40,130	423	93	235	90
1985	2,943	[2,553 390]	2,853	51,081	588	116	345	126
1989	2,051	[1,535 515]	4,801	61,689	730	90	485	155
1990	2,126	[1,622 504]	4,528	74,463	773	95	506	172
1991	2,269	[1,773 496]	5,046	74,855	804	98	499	207
1992	2,527	[2,019 408]	5,463	73,324	932	100	601	231
1993	2,814	[2,261 553]	5,927	72,945	987	130	618	239
1994	2,945	[2,393 552]	5,955	80,569	NA	NA	NA	NA

Source : MAFF (1994), MAI (1994)

Beef production

Meat production has increased continuously over the last three decades largely in response to increased consumption and government support. Total meat production in 1993 was estimated at 987,000 MT, up from 804,000 MT in 1991, and 423,000 MT in 1980. While total beef production in 1993 was around 130,000 MT (compared to 95,000 MT in 1990), it showed a relatively stable trend in recent years. Although meat production has increased markedly over the past decade, domestic production could not meet the rapidly increasing meat demand, especially for beef. The beef self-sufficiency ratio was at 56.3 percent in 1993. Con-

sumption of livestock products has increased rapidly with increase in income levels. Per capita meat consumption stood at 5.2 Kg in 1970, and by 1993 it had risen by almost 470 percent to 24.3Kg. Per capita beef consumption rose a further 1.9 percent in 1993. Domestic demand for meat, especially for beef, is increasing rapidly and may continue to grow in the future. Korean beef production was far from adequate to keep up with the growth in domestic demand and the outlook for a strong growth in domestic production is poor.

The government allowed beef import to meet the rising demand, and partially to stabilize domestic beef prices. However, beef imports have been restricted by a system of quotas and under the strict control of the government. Although the Korean beef market has been opened since 1986 under the quota system, beef imports continue to be under the control of the government. As meat output has not increased over the last 10 years, and prospects for a strong expansion in the near future are poor, the government has allowed beef imports to exceed initial quota almost every year.

Pork and chicken production

Pork has become increasingly important in the Korean diet because of the relatively low price. The output of pork has more than doubled during the last decade. Pork production increased sharply from 235,000 MT in 1980 to 618,000 MT in 1993. Chicken production also increased significantly from 90,000 MT in 1980 to 239,000 MT in 1993. The broiler industry is rapidly increasing due to income growth, an expanding processed food industry, and population growth. In addition, the introduction of fast-food chicken franchises has resulted in a rapid expansion in poultry production and consumption.

Conditions in the Korean meat sector in 1994 onwards suggest further import growth, especially due to the GATT agreement. Also,

profitability in meat production is declining further as consumers' demand has changed to cheaper imported meat. In recent years, the rate of increase in the production costs has exceeded the rate of increase in the farm gate prices. This has become a constraint to expansion at the farm level.

Milk production

Korea's dairy industry is a recent development and was began in the early 1960s, mainly by purchasing Holsteins. The growth in the dairy industry has been slow. Milk consumption has been increasing rapidly as a result of higher incomes. As shown in Table 10, dairy cattle accounted for about 19 percent of Korea's cattle. Milk production in 1993 was about 1.9 million MT, from the dairy herd number of about 553,000 animals.

By the early 1980s, the production of milk in Korea satisfied the demand for milk. Since 1982, milk consumption has increased rapidly, resulting in importation of milk until 1985. Between 1986 and 1990, domestic milk production grew at almost the same rate as consumption, resulting in no importation of milk. The 1993 milk imports amounted to 140,000 MT. However, total milk production over the past decade increased sharply from 452,000 MT in 1980 to 1.9 million MT in 1993.

Table 11. Milk Production and Consumption

	Production	Imports	Per capita consumption
	..... 1,000MT		..... kg .....
1970	48	–	1.6
1980	452	–	10.8
1990	1,752	–	42.8
1992	1,816	70	44.0
1993	1,858	140	45.0

Source : MAI(1994)

4. Fruit production

Fruit production is the most dynamic part of the agricultural sector in Korea and has increased rapidly from 833,000 MT in 1980, to 1,766,000 MT in 1990, and 1,905,000 MT in 1994(Table 12). The area planted to fruit continues to grow. In 1980 it was only 99,000 ha, but in 1994 the area planted to fruit has reached 161,000 ha. Korea enjoys favorable conditions for fruit production with its four distinct seasons, large differences between day and night temperature, humidity levels, and optimum precipitation. Several kinds of fruit including apples, pears, mandarin oranges, grapes, and sweet persimmon, are produced in Korea.

The fruit industry in Korea is dominated by apples and pears, to some extent, mandarin oranges in recent years. This is reflected in the relatively large area used for growing apples, 52,000 ha in 1994. Fruit production has increased steadily with government encouragement, but still depends heavily on weather conditions, and farming techniques. The fruit industry has operated as a business. A steady increase in fruit consumption indicates that fruit production should continue to increase in the future.

Table 12. Fruit Production and Cultivated Area

	1980		1990		1994	
	Production	Area	Production	Area	Production	Area
	..... Production(1,000MT), Area(1,000ha)					
Total	833	99	1,766	133	1,905	161
Apple	410	46	629	49	616	52
Pear	60	9	159	9	163	12
Grape	57	8	131	15	211	19
Peach	89	10	115	12	114	10
Mandarin	161	12	493	19	524	22
Other fruits	57	14	239	29	NA	NA

Source : MAI(1994)

Korean demand for fruit and vegetables increased steadily in recent years as incomes grew. The per capita consumption of fruit was 21.8 kg in 1980, while in 1993 it stood at 47.2 kg. In 1993, fruit and vegetable production accounted for about 30 percent of agricultural production in Korea(22 percent for vegetables and 8 percent for fruit), up from 16 percent two decades ago. In the past, the fruit industry did not draw much attention due to its position in Korean agriculture.

However, the changes in the policy objective from rice-centric to alternative crops, has caused these crops to gain importance. Changes in diet pattern is the other reason that has increased the importance of the fruit and vegetable sectors. Attention was paid to the fruit industry. In addition, the shortfall in domestic fruit production resulted in a sharp increase in fruit price levels. The government therefore has occasionally imported small quantities of fruit from abroad.

The government has taken various measures to increase the production of fruit, and to stabilize fruit prices. These measures include expanding orchards, constructing new storage facilities, and providing some financial assistance for handling fruit. Special programs for increasing fruit production have been undertaken in the past ten years. On the other hand, the Korean fruit industry has been protected by import restrictions including quotas, high tariffs, mixing regulations, and other phytosanitary regulations. These measures will also be eliminated gradually as a result of the Uruguay Round agreements.

5. Vegetable production

In 1993, total vegetable production reached 10 million MT, from the cultivated area of 378,000 ha, compared to 8.8 million MT in 1992, due to favorable weather and stable prices. Vegetable production in 1994 was expected to reach 11 million MT, a relative increase of 9.8 percent from

the previous year(Table 13). Vegetable production, which depends heavily on weather conditions, is of great importance for Korean agriculture. The leading vegetables grown by most Korean farmers are Chinese cabbage, radish, red pepper, garlic, and onion. Demand for garden products, especially vegetables, has increased in recent years with increased incomes. Accordingly, vegetable production has increased considerably over the 1970-1990 period.

Table 13. Vegetable Production and Cultivated Area

	1980		1990		1994(p)	
	Production	Area	Production	Area	Production	Area
	····· Production(1,000MT), Area(1,000ha) ·····					
Total	7,676	377	8,677	317	11,150	380
Chinese cabbage	3,040	48	3,241	44	2,689	42
Radish	1,973	49	1,686	35	1,592	38
Red pepper	125	133	133	63	290	93
Garlic	253	37	417	44	362	34
Onion	275	8	407	8	541	9
Other vegetables	1,598	84	1,776	83	NA	NA

(p) : Preliminary. Source : MAI(1994). MAFF materials

However, their market prices and production tend to fluctuate considerably and more frequently than many other products due to factors such as weather conditions and shorter storage life. Per capita consumption of vegetables has remained stable over the past decade, while in recent years, it increased considerably. In 1980, per capita consumption of total vegetable stood at 120.3 kg, while in 1993 it was 133.6 kg.

The AFMC(Agricultural and Fisheries Marketing Cooperation) handles the practical operation of vegetable price stabilization mainly through buffer stock policy which is dependent on government supply

and demand forecasts. Stocks are released into the market at prevailing prices, during periods of high price increases. In recent years, the major crops purchased and released were red pepper, garlic, and onions. The total amount of funds for stabilization reached 1.2 trillion Won in 1994, covering about 20 percent of the total volume marketed.

Part II

TRADE IN THE AGRICULTURAL SECTOR

I. Korea's trade in perspective

1. Free trade principle

Korea's trade policy has been based on free trade principles. Since Korea's entry into the GATT in 1967, Korea has been faithful to the GATT framework and principle. Korea's remarkable economic development in the industrial sector over the past four decades has been completely dependent on outward-looking trade policies, as well as the favorable free trade environment based on the GATT framework. The free trade principle has been very important.

The trade dependency ratio(exports + imports)/GDP) of the Korean economy grew from 21.9 percent in 1962 to 80.3 percent in 1990. Korea's dependence on trade is likely to continue in the future. In other words, the adoption of the outward-looking development strategy supported by successful trade policies over the past decades has put Korea on the fast track towards becoming a major trading country in the world.

Korea's trade policy was oriented toward promoting exports and contributing to world economic development. Korea's trade policy can be characterized by three major objectives:(i) a balanced expansion of external trade, based on free trade principles, (ii) internationalization of trade-related regulations and institutions, and (iii) continued contribution to maintaining and strengthening the multilateral trading system. Under these principles, except for import-limited or prohibited items, all other commodities can be imported freely.

Based on these principles, the Korean government has steadily implemented a wide range of liberalization measures. In particular, since Korea's entry into GATT in 1967, the government has brought several trade-related rules and practices in order to conform with the GATT principles of non-discrimination, transparency, and predictability. Major

programs and measures implemented over the past decades include a 5-year tariff reduction plan in 1984, gradual liberalization of financial and capital markets, the opening of service markets, and the relaxing of several regulations on trade-related laws and provisions. From 1986, when the nation started to generate a surplus in its balance of payments, the pace of import liberalization was further accelerated. As a result, almost all products are traded freely. In 1992, the total trade liberalization ratio (the number of commodities that could be freely imported compared to the total number of goods) reached 97.2 percent.

Rapid increase in total trade volume

Korea's total trading volume has increased rapidly over the past three decades. In 1962, it stood at only $US 477 million, but by 1994 it had reached $US 198.6 billion, making Korea the 11th largest trading nation in the world. Total exports in 1994 stood at $US 96.0 billion on custom clearance basis, a 16.7 percent increase from the previous year. Total imports in 1994 were $US 102.3 billion. Between 1962 and 1990, Korea's exports and imports grew at an annual average rate of about 30.3 percent and 22.1 percent, respectively.

In recent years, total exports have grown sluggishly, mainly due to the unfavorable world trade environment and gloomy domestic conditions including wage hikes, slow progress in technological innovation. Korean firms can no longer retain a comparative advantage in the low-cost products by means of cheap labor and subsidized investment. The lack of research and development investment has become evident. In recent years, imports of agricultural products have increased continuously, accounting for about 10 percent of the total import value.

Total trade balance has moved from surplus for the period 1986-1989 to deficit since 1990. In 1994, the total deficit was recorded at $US 6.3 billion, up sharply from the deficit of $US 1.6 billion in 1993. Trade defi-

cit peaked in 1991 to almost $US 10 billion, due mainly to the decrease in export volume as a result of loss in competitiveness in world markets and continued increase in imports. Korea's further success in trade will depend on the selection of the best combination of exports products and regions.

2. Trade-related laws and regulations

Korea's trade-related laws and regulations are found on the principle laid down in the Economic Clause of the Korean Constitution. Based on this, the Foreign Trade Act prescribes the general provisions and procedures for external trading. The Foreign Exchange Control Act and the Customs Act contain provisions related to the settlement of payment, loans and debts, and the imposition of tariffs and customs clearance procedures.

Korea has virtually no restrictions on exports. However, imports may be restricted in a limited number of cases in line with bilateral or multilateral agreements. Korea's import restrictions are operated primarily by the Foreign Trade Act. Based on this law, Export-Import Notice and Consolidated Public Notice system are implemented. In addition, some individual laws exist to administer special items, protect human health, animal and plant sanitation. Individual laws contain other legal restrictions and administrative controls on special items, for the purpose of protecting national security, human health, animal and plant sanitation, and the environment, based on international agreements.

3. Border measures

Export measures

Korea does not have any export measures that could be classified as export subsidies. Most products are exported by private companies. As

far as agricultural products are concerned, no export licensing, export charges or export funding are provided by the government. Korea has no restrictions on export except in cases where international agreements require such restriction.

Import measures

Border measures such as quotas, tariffs, and non-tariff barriers have widely been used for protecting Korean farmers. Several agricultural products, including rice, barley, and beef are protected by a special law or tariff quotas. For example, government supports the beef sector through import quotas,a 20-percent tariff, state trading(by LPMO), and some control of beef marketing and distribution.

Import restrictions according to the Consolidate Public Notice include mainly special laws. In 1994, there were 46 special laws regulating imports. Of this total, 17 laws were related to agricultural products. Notable among these laws was the Food Grain Control Act, which required annual approval from the National Assembly for imports of rice and barley for food purposes. Approval is given only if the price stabilization schemes for these products indicate a shortage of domestic supply. Foreign trading partners always complain about these secondary restrictions, and try to break down any barriers that restrict free trade. Of the total 1,867 agricultural commodities, almost 92 percent(1,725 items) were liberalized by the end of 1994. The number of commodities with restrictions were 142 items by the end of 1994.

Quotas

Korea does not maintain quotas under its Import Notice. However, to support price stabilization schemes, certain items, such as beef, corn, soybeans, and other grains, are subject to quotas. The quotas were adjusted annually according to the domestic conditions. For example, the actual

volume of beef imports exceeded the initial quota levels. These quota systems are applied on an MFN basis, with competitive bidding by foreign suppliers. Quotas are set annually by the MAFF in consultation with respresentatives from several interest groups. Imports above quota limits may also be permitted, if there are indications of excess demand during the coming year.

Tariff

Import tariffs on rice and food-barley were 5 percent, while corn and beef were mainatined at 3 and 50 percent between 1990 and 1992. The average tariff rate for agricultural products was 17.8 percent in 1993 and expected to reduce to 16.6 percent by 1994. In the case of beef, pork, the tariff rates were 30 and 50 percent, respectively, while binding tariff rates for corresponding products were 20 and 25 percent respectively. For vegetables, the tariff ratio is comparatively high, ranging from 30 percent to 50 percent. The average tariff for fruit in 1995 is 50 percent.

Although many products are subject to relatively high tariffs, the Korean government has continued to reduce its tariff rates, and introduced a tariff reduction plan in line with the trade liberalization plan. From 1995 onwards, the Korean government intends to modify tariff rates in accordance with the results of the GATT agreement. Modifications to these tariffs were implemented in February 1994 in conjunction with the GATT agreement signed in Geneva in December 1993. Provisions have also been made for taking emergency actions such as the application of additional tariffs on imported products, if conditions are satisfied.

Phytosanitary regulations

Animal health standards and sanitary regulations also had a significant impact on trade flow. Korea forbids imports of animals and of uncooked meat from countries where major animal diseases are endemic.

To ensure the safety of imported agricultural products, the Office of National Agricultural Products Inspection Services(NAPIS), the National Animal Quarantine Service(NAQS), and the National Plant Quarantine Service(NPQS) carry out inspections along internationally approved guidelines, agreements and provisions. Raw meat inspection is carried out by the NAQS, while processed meat products are inspected by the Quarantine Office of Ministry of Health and Welfare. All imported plants and plant products, animal and animal products, containers and packing are inspected by the above mentioned offices.

The objective of the inspections is purely for technical purposes. Inspection is carried out to protect human, animal and plant life in line with the relevant international provisions. One example: imports of livestock products related to cloven-hoofed animals and animal products from countries where infectious diseases exist are prohibited because of the risk of introducing foot and mouth disease. The inspection bodies issue a certificate of phytosanitary inspection under the provision of international plant protection convention. The government has also made efforts to improve infrastructure for the operation. There is no discrimination or unjustable treatment for special commodity or country.

All too often, foreign importers complain that the Korean government is too slow in implementing the inspection process and the existence of secondary restrictions continue to hinder market access. They argue that many Korean customs and regulations are overly restrictive and subject to frequent change, as well as the regulatory processes which lack transparency, predictability, and provide broad discretionary authority to officials.

According to the agreement reached by GATT, countries will only be able to apply to the extent necessary to protect human, animal or plant life or health, based on scientific principles. However, if member coun-

tries provide scientific certificates, stricter national standards may be used. This will limit the arbitrary use of health and sanitary regulations as a means of restricting agricultural imports. A Committee on Sanitary and Phytosanitary Measures shall be established to carry out the functions necessary to implement the provisions of the Agreement.

Others

Other forms of border measures in Korea include rules of origin and mixing regulations in some fruit juice. By the late 1980s Korea was considered to be one of the countries with high trade barriers and thus had come under increased pressure from trading partners to open up its agricultural markets. These strong restriction is partly reflected in high PSEs and CSEs.

4. Rapid increase in agricultural trade

In Korea, most agricultural products have been consumed domestically. None are exported in significant quantities. The agricultural trade therefore, has not attracted much attention insofar as export earning policy is concerned. The share of agricultural exports in total export fell from 26 percent in 1970 to 3.3 percent in 1993, reflecting agriculture's low proportion in export earning(Table 14). The volume of agricultural exports, in absolute terms, increased markedly from $US 218 million in 1970 to $US 2,760 million in 1993, an increase of almost 13 times. In recent years, it remained stationary at around &US 2.8 billion.

Table 14. Shares of Agricultural Trade

	1970	1980	1990	1993	1994
Total trade	·····	·····	$ US million	·····	·····
Exports(A)	835	17,505	65,016	82,236	96,013
Imports(B)	1,984	22,292	69,844	83,800	102,348
Agriculture					
Exports(C)	218	1,930	2,920	2,760	2,800/1
Imports(D)	469	3,164	5,789	7,811	8,000/2
Ratio					
(C/A, %)	26.1	11.0	4.5	3.3	2.9
(D/B, %)	23.6	14.2	8.3	9.3	7.8

/1 : Preliminary

Source : MAI(1994). 1995 MAFF trade materials.

Total agricultural imports have increased sharply over the last three decades, accounting for about 8 percent in 1994. Total agricultural import in 1970 was only $ US 469 million, while in 1994 it reached almost $ US 8,000 million, in terms of value, up from $ US 7,811 million in 1993. The major reasons for this increase in the agricultural imports are higher income and changes in consumption pattern.

Korea is playing a greater role in international agricultural trade. As can be seen in the increasing volume of agricultural products, Korea has increased its importance as a major market for cereals and livestock products for the agricultural exporting countries. Korea has now become the world's sixth largest agricultural importer, with agricultural imports amounting to almost $ US 8,000 million in 1994. The general growth in agricultural imports reflects improved conditions of access to foreign markets. The expansion of agricultural import is expected to continue in the near future and has important implications for the agricultural sector in Korea.

An important change in 1994 was the recognition of agricultural trade liberalization in order to cope with the changing world situations, which was reflected by the announcement of the opening of the Korean rice market in December 1993 as a result of the GATT agreement. Agricultural trade issues have become more important and are likely to remain an important point both at home and abroad.

II. Agricultural exports

1. Agricultural exports by commodity

Korea's agricultural exports have increased gradually until the 1980s. Since the early 1990s, they remained almost stable at around $US 3.0 billion, in terms of value. Agricultural exports in Korea are limited by land constraints and climate conditions, as well as by dietary patterns. With a few exceptions, most agricultural products are consumed domestically. Traditional culture and dietary patterns center on fermented foods. This may explain why Korean foods are not popular abroad. In addition, production costs of most agricultural crops are relatively high and thus Korean agricultural products have no comparative advantage in world market.

As stated earlier, the value of agricultural exports has tended to remain stable in recent years, ranging from $US 2.8-3.0 billion over the past five years. In 1993, agricultural exports were worth $US 2,757 million, a 3.8 percent decrease from the year before. In 1994, it was estimated to reach about $US 2,800 million(Table 15). In the past, Korea's major exporting items were centered on silk, ginseng, and fishery products. In recent years, the largest export items have been live fish and fishery products(including canned products), mainly to Japan, accounting for about 50-60 percent of total agricultural exports in terms of value.

No single product accounted for a considerable proportion in agricultural exports. In 1993, the major Korean exports were fishery products, chestnuts, kimch and apples, which accounted for 54 percent, 3.4 percent, 1.2 percent and 0.2 percent respectively. A large proportion of Korea's exports is focused on raw materials, and in recent years the share of processed products has risen. The share of other items in total exports re-

mains almost stable, and accounts for a minor proportion of total exports. However, the variability and growth rate in the volume of each commodity have differed across commodities.

Table 15. Selected Exports by Commodity

	1992	1993	1994. 11
	.....	$ US million	.....
Total	2,888	2,757	2,752
Fishery products	1,518	1,496	1,458
Apples	25	8	3
Kimch	23	34	40
Pork	42	63	59
Ginseng	138	NA	NA
Ramen(instant noodles)	39	43	54
Beer	14	15	16
Pears	4	5	5
Chestnuts	102	95	122
Plywood	37	39	36
Refined sugar	93	75	87

Source: 1995 MAFF Trade materials

From the late 1980s, the government tried to increase agricultural exports, which so far have been largely focused on raw materials because of Korea's residual nature of agricultural exports. The results, however, have had limited success and it is unlikely that this trend will change substantially during 1995. In order to increase agricultural exports, it will be necessary to create and maintain an infrastructure which would ensure the quality of the products. The high transport costs to the large consuming countries are another impediment for the expansion of agricultural exports. In addition, standardization recommended by international orga-

nization may be considered as a possible hinderance to the development of the Korean agricultural exports. Moreover, Korea has faced increased competition from world markets, mainly from China, and thus could have a negative effect on Korea's export markets.

2. Agricultural exports by country

Agricultural exports by major countries is given in Table 16. It is clear from the trade flows experienced in recent years, that Korean agricultural exports is focused very much on one country; Japan, accounting for more than 65 percent of total agricultural exports. In 1993, about 68 percent of total agricultural exports went to Japan(Table 16). Due to the close proximity of this market and the similarity in dietary pattern, Japan has been the dominant export destination for Korea. This concentration in the destination of exports is especially prominent for fishery products.

Table 16. Agricultural Exports by Country

	1993		1994. 11	
	Share	Value	Share	Value
	····· Share: percent, Value: $ US million ·····			
Japan	68.4	1,872	67.5	1,830
USA	7.1	195	6.2	168
EU	5.0	137	5.2	141
Hong Kong	5.5	150	5.2	141
Taiwan	1.7	46	1.8	50
Thailand	2.3	64	2.4	65
Singapore	1.5	41	0.7	20
Canada	0.9	25	0.7	20
Australia	NA	NA	NA	NA
China	1.3	35	2.3	62

Source : 1995 Trade materials.

The US has been the second largest export market for Korean agricultural products, accounting for about 7 percent of total exports in 1993. The US's share increased from 6.5 percent in 1992 to 7.1 percent in 1993. Major items exported to the US include Ramen(Korean instant noodle), bean paste, and canned vegetables, but these items have not attracted much attention. Exports to the US are forecast to remain stable at about $ US 200 million for the time being.

Other export destinations include the EU(5.0% in 1993), Hong Kong (5.5%), Taiwan(1.7%) and Thailand(2.3%). The proportion of Korean agricultural exports to other countries remained stable and relatively low, accounting for less than 5 percent of total. It reflects a relative decline in importance in agricultural export earnings in Korea. There are signs that the rate of agricultural exports is slowing steadily because of continued competition from other countries. With the exception of a few products, Korean agricultural exports have tended to stagnate or to decline. To some extent, this reflects that there is growing domestic demand which takes precedence over export markets.

III. Agricultural imports

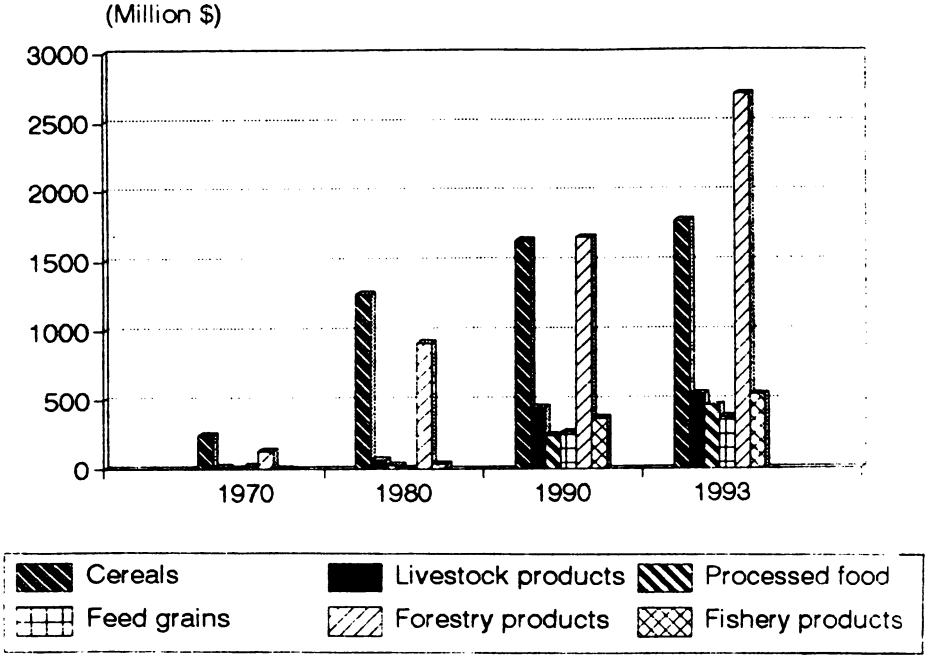
1. Agricultural imports by Commodity

During the past three decades, the volume of agricultural imports in Korea has increased dramatically. The expansion of agricultural imports has been due largely to the rapid growth in income levels and changes in consumption pattern. Partially strong growth has occurred in animal products and in the feedgrains used to produce animal products. The increasing population, rising incomes, changing tastes and preferences have made it necessary for Korea to increase the imports of foreign agricultural products, in particular, beef, soybean, wheat, corn and feed grain.

The overall food supply in Korea is not sufficient to meet the increasing domestic demand, which is generated by the changes in consumption patterns and increased income levels. The result is a steady growth in the imports of agricultural products over the past decades. In part, for the purpose of stabilizing domestic prices, the government has imported a variety of agricultural products.

Korea has been a net importer of agricultural products, especially of feed grains, beef and some fruit. Except for rice, pork, and some fruits and vegetables for which Korea is almost self-sufficient, Korea imports the majority of its agricultural products. Imports of agricultural products include a wide range of commodities, although the composition is shifting. Particularly strong growth has occurred in animal products(meat and dairy), feed grains used to produce animal products, and fruit and vegetables. Consumers in Korea display a marked preference for these products as their incomes rise.

Figure 12. Trends in Agricultural Imports



Imports of agricultural products are expected to grow in the future, because domestic production is not expected to be able to satisfy the rapidly growing domestic demand. To some extent, the high increase in imports has been attributed to the high increase in high-quality foods, such as meat and some imported fruit. This has resulted in Korean imports of about $US 7.8 billion in 1993. Korea has become the world's sixth largest agricultural importer, with agricultural imports amounting to almost $US 8.0 billion in 1994(Figure 12).

Four major import commodities

Corn, wheat, soybean and beef have been the four major import commodities in terms of value(not necessarily in that order every year). These four items accounted for about 50 percent of the total agricultural imports in the 1990s. In 1993, their shares of total agricultural imports were 9 percent for corn, 8 percent for wheat, 4 percent for soybean, and 4 percent for beef. Imports of agricultural products in general are expected to increase in the future in order to meet heavy demand. In 1993, Korean agricultural imports totaled $US 7,811 million, a 18.8 percent increase from the previous year. Six major items, including corn($US 702 million), beef($US 332 million), soybeans($US 290 million), wheat($US 665 million), soybean cakes($US 160 million) and sugar($US 315 million) accounted for about 60 percent of total agricultural imports(Table 17).

Table 17. Breakdown of Agricultural Imports by Commodity

	1992	1993	1994. 11
	.....	$US million	.....
Total	7,147	7,811	7,869
Corn	847	702	613
Soybeans	330	290	318
Beef	478	332	382
Animal feeds	326	NA	NA
Fruit juices	103	NA	NA
Confectionery	80	NA	NA
Cigarette	179	143	169
Bananas	80	56	47
Forestry products/1	1,873	2,697	2,336
Fishery products	507	542	661

/1 : Includes woods, stones, and related products. Source : 1995 MAFF Trade materials

2. Agricultural imports by country

Agricultural imports into Korea are dominated by the US, Australia, and in recent years, China. The US has been the primarily source of agricultural imports, accounting for around 26 percent($ US 1,937 million in 1993) in recent years. In the case of soybean, the US accounted for 97 percent of total imports in 1991, while in the wheat and corn markets, it accounted for 44 percent and 41 percent respectively.

Table 18. Agricultural Imports by Country

	1992		1993		1994. 11	
	Share	Value	Share	Value	Share	Value
	..... Share : percent,		Value : $ US million		.....	
USA	29.5	2,107	26.1	1,937	23.9	1,845
China	15.1	1,080	14.2	1,055	14.4	1,115
Malaysia	8.7	620	9.5	715	8.3	637
Australia	6.8	485	7.7	574	6.7	519
Indonesia	6.7	480	9.6	715	8.3	637
EU	4.5	321	7.9	617	6.2	479
Thailand	4.4	314	NA	NA	NA	NA
New Zealand	3.6	255	4.6	344	4.4	340
Canada	2.5	180	5.1	375	5.6	436
Japan	2.2	159	2.6	191	3.0	232

Source : 1995 MAFF Trade materials.

In recent years, however, China has replaced the US, accounting for about 14 percent($ US 1,115 million) of total imports in 1993(Table 18). Significant imports were seen in the markets of corn and soybeans. Chinese products have many advantages over those from other countries, including lower prices, regional proximity, and similarities in quality. Malaysia provided another 9.5 percent($ US 716 million) in 1993, mainly

for wood products. Other countries include Australia($ US 574 million in 1993), Indonesia($ US 715 million, mainly plywood) and the EU($ US 617 million). Agricultural imports from the EU accounted for 7.9 percent of total in 1993 compared with 4.5 percent in 1992. New Zealand and Canada in 1993 had shares amounting to 4.6 percent and 5.1 percent, respectively. The shares of agricultural imports from other countries remained almost stable, but these countries are becoming important to the Korean agricultural imports.

Ⅳ. Trade liberalization

Market opening of the agricultural sector is very sensitive, both politically and economically, particularly in relation to agricultural products in Korea. It is often believed that Korea provides extensive protection for all its agricultural production. However, considering the range of commodities which may be imported freely, the degree of openness in Korea's agricultural trade is relatively high.

1. Gradual liberalization

Korea has come under strong pressure to open its agricultural market. Since the early 1980s, Korea has pursued active trade liberalization policies by reducing tariffs and other import restrictions in the agricultural sector. Restrictions were lifted in the agricultural import sector on 29 items in 1984, 37 items in 1985, 21 items in 1986, and 8 items in 1987. In 1988, an additional 43 items including avocados, prepared fruit and canned anchovies were liberalized.

Nevertheless, pressure from the main trading partners to open the agricultural market has increased steadily particularly from the major trading partners, such as the US, Australia, the EU and Canada. The US has asked for further liberalization of agricultural market, threatening to use the super 301 provision. In the case of beef, the market was opened in 1988 as a result of the bilateral trade negotiations between Korea and the US. Korean import liberalization has been accelerated by the decision of the GATT panel, which stipulated disinvoke of GATT Article XVIII;B in 1989.

In April of 1989, the Korean government announced a three-year (1989-91) import liberalization schedule for agricultural products. Under this plan, some 243 agricultural, forestry and fishery products were liberalized. Korea also liberalized 82 items in 1989, 76 items in 1990, and 85

items in 1991. The other Import Liberalization Plan was announced in March 1992 by the government, liberalizing 137 agricultural items from 1992 to 1994; 46 items in 1992, 46 items in 1993 and 45 items in 1994. Early in 1993, the government liberalized a further 45 products in line with the 1992-94 import liberalization program. The government is also implementing the second three-year liberalization plan covering 1995 and 1997, liberalizing 142 agricultural products by 1997. Thus Korea's "import liberalization ratio"(the ratio of the number of commodities that could be imported compared with the total number of agricultural commodities) of agricultural products reached 80.4 percent in 1990, and 92.4 percent in 1994(Table 19).

This liberalization has been achieved mainly through the GATT's provisions, with the understanding that remaining restrictions will be lifted or otherwise be brought into conformity with GATT rules by July 1 1997. The phasing out of the remaining restrictions has been carried out in a generally even-handed manner under two three-year liberalization programs. Korea now plans to liberalize its imports in line with the results of the Uruguay Round trade negotiation

Table 19. Trends in Import Liberalization and Tariff Reduction

	1990	1993	1994
Import liberalization(%)			
Total	96.3	98.1	98.6
Manufactured products	99.7	99.9	99.9
Agricultural products	80.4	89.9	92.3
Average tariff rates(%)			
Total	11.4	8.9	7.9
Manufactured products	9.7	7.1	6.2
Agricultural products	19.9	17.8	16.6

Source : 1995 MAFF materials.

2. Trade barriers to reduce

During the past several years, Korea reduced certain tariffs, import bans, and some trade restrictions. Most foreign trading partners have welcomed the liberalization plan, but some argued that the Korean government has been too slow in implementing the liberalization schedule. They also criticized secondary impediments to trade, such as phytosanitary regulations. For the trading partners, the 1992 liberalization seemed meager, while the anticipated further liberalization for 1994 might not produce enough growth. Major trading partners have expressed disappointment over the progress of the liberalization program.

Partly due to pressure from foreign countries, and also to the increasing demanding for reform of agricultural policies from domestic consumers, the government has implemented several policies to reduce agricultural support and has lifted a number of restrictive measures. While Korea's move toward removing restrictions on agricultural imports as a result of multilateral negotiations(also bilateral agreements) was seen to be of symbolic importanceby a number of countries, and welcomed by many trading partners, many countries have requested further liberalization.

The number of agricultural products subject to import restrictions was substantially reduced during the later 1980s. Considerable reduction in tariffs for agricultural and fishery products have taken place even in the areas where there is domestic production. For example, the liberalization of wheat trade took place in 1984 and beef trade has been opened through a quota system administered by the government. Further liberalization will take place in Korea as a result of the Uruguay Round trade negotiations. By the year 2004, almost all agricultural products are to be imported freely. It is therefore clear that liberalization is proceeding, although the pace is gradual.

Part Ⅲ

AGRICULTURAL POLICIES

I. Agricultural policy objectives

1. Policy goals

Agricultural policy goals vary by time, place, region and priorities in the national economy. To ensure a prosperous and productive agriculture sector, and to maintain a healthy and energetic rural population enjoying a high quality of life are important policy objectives for many countries. In the U.S, the objectives are: supporting prices and farm income, maintaining adequate supplies of food and fiber, preserving the family farm, promoting resource conservation, and being competitive have been philosophies and objectives of agricultural policies in the 1980's. The 1990 farm legislation must provide American farmers with cost-effective programs which accommodate the changing conditions in the farm sector and the world(Agricultural-Food Policy Review, USDA. 1989).

In Korea, the major objectives of agricultural policy have been to achieve improved food supplies both quantitatively and qualitatively, to achieve a higher quality of life in rural areas, and to maximize agriculture's contribution to the national economy. The basic objectives of Korean agricultural policies are prescribed in the Agricultural Basic Law, enacted in 1965. The Law states that the objectives of the agricultural policy should be (i) to raise productivity so that the gap in productivity and income between agriculture and other industries will be reduced and (ii) to enable farmers to enjoy equal standards of living with workers in other industries.

These major objectives are closely related to the role of agriculture in a nation, and have been changed by the priorities of the national goals. As in many other countries, the following are the major roles of agriculture in the national economy: provision of food commodities, labor sup-

ply for the non-farm sector, raw materials for other industries, foreign exchange savings, capital generation, land for non-agricultural use, and quality of life.

In sum, Korea's major agricultral policy objectives are to provide adequate food supplies, to increase farm income and improve rural living standards comparable with the living standards of urban dwellers, to maintain price stability, and to preserve the vitality of rural communities. While they are in many respects similar to those in other countries, given Korea's economic development stage, the emphasis has been primarily on increasing agricultural productivity and thus food supplies and farm income levels.

Changing objectives

Agricultural policy reflects philosophies, values, events, and reactions both to economic indicators and to political pressures. Thus, the basic focus of agricultural policy in Korea has evolved over time depending on the social, economic, and political situation of the nation. These agricultural policy goals, fairly constant over the years, have been adjusted from time to time as new issues and problems have emerged. Because agriculture is perceived as more than just an industry, the Korean government has also pursued social, political, and economic objectives through its agricultural policies.

In the 1960s and early 1970s, the principal goals of agricultural policy were focused on providing a stable supply of food and increasing farm income so that living standards of the farm sector would be comparable with those in the urban sectors. In recent years however, the focus is moving toward improving rural ways of life and maintaining reasonable farm prices, and preserving environmental benefits. Even within the agricultural programs, importance has also been placed on policies for increasing exports, better seed varieties and improved technologies.

While the original values or objectives of Korean agricultural policy remained much the same over time, the emphasis and tools have changed. More recently, there has been a new focus on the contribution of agriculture to public interest functions, such as the conservation of land and preservation of the environment. For example, paddy fields can help to control floods by acting as reservoirs, enrich water resources, prevent soil erosion, clean the atmosphere and the water, and maintain landscapes.

Support and cooperation

Achieving agricultural policy objectives requires broad support and close cooperation with other sectors because agricultural policy today is a part of the national economy, and the interdependence between agriculture and the rest of the economy has become more complex. The choices of agricultural policy therefore have been influenced and at times severely constrained by the developments in the other sectors. With limited resources, an agreed and harmonized cooperation, compromise or trade-off against other objectives seems to be imperative as Korea in recent years faces further structural transformation.

Unlike the policies implemented in the past, the current agricultural policies have to take account of international factors, as well as domestic factors, because they affect the trade policies including tariffs, quotas, and other trade measures which are of concern to foreign trading partners. Agricultural policy in the 1990s is a matter of international concern. These compromises are also conditioned by several factors including fiscal, monetary, social and political constraints. Many policies, programs, and projects have been implemented and amended in line with these policy objectives and guidelines over the last four decades. At different times, the priorities and means of achieving these objectives have changed.

National goals, even the objectives of agricultural policies themselves, have often been contradictory and have required compromises in their implementation. For example, while it is against the farmers' wishes, the desire has been expressed for prices to be lowered so that urban wage earners are able to buy adequate food. Achieving policy goals, therefore, requires broad support and close cooperation with other sectors. With limited resources available to achieve policy goals, an agreed and harmonozed cooperation, or trade-off against other objectives is imperative.

2. Administrative organization

There are many government organizations and semi-government organizations participating in the implementation and decision making of Korea's agricultural policy. The Ministry of Agriculture, Forestry and Fisheries(MAFF) has overall authority for formulating and executing agricultural policy. The various agricultural laws are basically enacted by the National Assembly, while the government assists in the enactment of laws and is responsible for the implementation of the various laws.

In 1995, there are 4,743 officials in the Ministry of Agriculture, Forestry and Fisheries(Central office 640, Subsidiary Organization 2,086, Local Agricultural Statistics Office 2,017, Provincial officials 1,164). In addition, 6,663 officials work for the agricultural, forestry, and fishery area(Rural Development Administration 2,712, National Fisheries Administration 1,878, Forestry Administration 2,073). The Minister has one vice minister, and three assistant ministers. Each assistant minister is in charge of four or five bureaus. Generally, one bureau is composed of four or five divisions. There are 43 such divisions in 1995.

Other related organizations include the Ministry of Finance and Economy(MOFE), Ministry of Home Affairs(MHA), and Ministry of Con-

struction(MOC). All of these organizations are also engaged in implementing agricultural-related policies. These ministries are also involved either at the central level such as MOFE(which are responsible for supporting national budget) or the local level such as Ministry of Domestic Affairs, dealing with price support, infrastructure and so on. However, it is the MAFF itself which possesses the formal authority to plan the agricultural policy and implement the programs.

Certain semi-public organizations are also active in carrying out agricultural policy. These include the National Agricultural Cooperatives Federation(NACF), the National Livestock Cooperatives Federation (NLCF), the Agricultural and Fisheries Marketing Cooperation(AFMC), and the Livestock Product Marketing Organization(LPMO). Of these institutions, the major players are the NACF, NLCF and AFMC. These institutions are pervasive throughout the whole agricultural activities, providing price support, distributing farm credit, supplying inputs to farmers, and importing and exporting agricultural commodities.

Most of these bodies have monopolistic or semi-monopolistic powers and thus influence both the agricultural policy decision making process through their participation and its actual implementation. A lack of cooperation between several organizations and deficiencies in specialization are major problems in the decision making process. Moreover, many of the agricultural programs are carried out through administrative channels at provincial and county level, that are not answerable to MAFF.

3. Historical perspectives.

A review of the major historical perspective will be useful in understanding the Korean agricultural sector. Each of the major perspectives will be difficult to study precisely. For simplicity's sake, post world war II performance of the agricultural sector can be divided into four stages:

an initial stage from 1948 to 1960, a developing stage from 1961 to 1980, a transition stage from 1981 to 1990, and a structural adjustment stage since 1991.

A. Initial stage(1948-1960)

During the 1948-1960 period, the agricultural sector played an important role due to the underdevelopment of other sectors. In 1949, about 14 million farmers, 72 percent of the total population, were engaged in the agricultural sector and about 46 percent of total GDP was contributed by the agricultural sector. However, the agricultural sector did not develop by comparison with the industrial sector due to the industry-oriented government policy, and partly to the underdevelopment of social, political and economic circumstances.

This stage was dominated by post-war reconstruction measures. During the 1950s, the government made strong efforts to rehabilitate its economy and alleviate inflation. Thus, a low price policy for food grains had been pursued by the government as part of an effort to maintain price stability. However, the price paid to farmers has been raised continuously since the late 1960s. Since 1948, government efforts have focused on the enactment of laws, the establishment of provisions and institutions. Thus, agricultural policy emphasized primarily: (i) a stable supply of food, (ii) increasing agricultural production, and (iii) the rejuvenation of agriculture-related institutions.

Major achievements during this period were land reforms, a sufficient supply of food grains and stabilization of food prices, execution of long-term production improvement projects and consolidation of the agricultural credit system, and the establishment of the National Agricultural Cooperatives Federations.

B. Developing stage(1961-1980)

In the second phase of agricultural activities, which lasted from the early 1960s until the early 1980s, economic development grew very rapidly mainly due to the successful achievements of the five-year economic development plan. During the period from 1962 to 1976, the national economic development plan was implemented.

Throughout the period, growth in the non-agricultural sectors, had outpaced the growth in agricultural sector. The agricultural sector was left behind as a policy priority. The government focused its agricultural policy on expanding domestic production to reduce foreign expenditures on farm products. Efforts were also made to reduce the growing income disparity between the urban and rural sectors. Agriculture was hard pressed to meet the demands of the rapidly expanding urban-industrial sector. Increasing agricultural production and ensuring a stable supply of food were the major points stressed during the periods.

Some of the important policy activities were high farm debt relief, the enactment of the Agricultural Price Stabilization Law(1961), land reclamation, agricultural production increases, farm mechanization, and the establishment of the new village movement(Samaeul Movement). Particularly noticeable of this period is the implementation of massive irrigation projects and other infrastructure improvement in agriculture. The government has carried out several land resource development and improvement programs over the period.

C. Transitional stage(1981-1990)

High economic growth was followed by an economic recession in the 1980s. Thus, the government's major policy objectives were changed from growth to stability. With respect to the agricultural sector, a stable food-oriented production improvement policy, accompanied by high sup-

port and a two-tier price system, was strongly opposed by more market-oriented government officials because of the high cost of purchasing rice. Many economists, including government economists, and the general public, began to support the idea of opening the agricultural market to meet the expanding demand for agricultural products.

Several policies and programs were implemented during this period, including production base improvements, economic crop production increases, the development of the livestock industry, agricultural marketing structure improvement, and rural infrastructure improvement. In addition, certain related laws, provisions and institutions were adapted. Attention was also paid to the multi-farming system which emphasized cultivating several economic and income-oriented crops. Rice production increased sharply, resulting in overstocking problems.

Another major policy innovation was the fostering of rural young farm successors, to address the decline in the rural farm population. With respect to the major transitions, the 1991 USDA report described " In the 1980s, this transition was highlighted by rapid rural-urban migration, the development of the livestock sector, and increased production of fruits and vegetables. Particularly noticeable is the expansion in the livestock industry which is heavily dependent on imported feed grains. Since the early 1980s the changes in consumption pattern of the Korean diet toward meat have been significant, reflecting the increased importance of the livestock sector.

D. Structural adjustment stage(1991-)

Since 1990, the Korean agricultural sector has remained in transition. The structural problems facing Korean agriculture at the beginning of 1990s were inherited from previous decades and the following phenomena are evident in the recent agricultural situation: rapid urban migration, development of higher-value products, increased production, higher

price instability, increased volumes of imported products, and trade pressures from foreign countries.

It is true that the transition becomes more structural in the 1990s and, the challenge for the Korean government will be to ensure that the structural transition is positive and sound. The characteristics of this structural adjustment stage include growing incomes and increasing consumption of western style food, a high level of protectionist government intervention in agricultural production and trade, and a high level of price sensitivity in import markets for raw materials and feed ingredients.

Other factors influencing the agricultural economy in the 1990s were a pervasive downturn in the general economy, and continued pressure from trade partners to liberalize agricultural trade. In recent years, farmers including several farm organizations, both public and private, have exercised considerable political power. They demand that the government supports price increases and restricts imports. The government has been under pressure from foreign exporters to liberalize trade restrictions for a wider range of products, and to abolish the remaining trade prohibitions. The government has planned to restructure the agricultural sector and announced an "Agriculture Structure Adjustment Plan" that is expected to help modernize the sector.

According to the recent OECD publications Korean producers are greatly assisted by government policies as is represented by the high PSEs and CSEs. The producer subsidy equivalent is greater in Korea than in any OECD country and twice that of the average OECD country (PSE: Korea 96, OECD average 49, CSE: Korea 213, OECD average 92, 1990). Pervasive government intervention in agriculture will not change in the near future.

II. Agricultural Policy Instruments

Overview

To achieve the policy objectives for agriculture, the Korean government intervened extensively in the agricultural sector and has implemented a set of measures. Agricultural policy in Korea is strongly influenced by a self-sufficiency objectives and thus production has been highly protected historically. Government intervention in agricultural policy in Korea takes many forms, and major instruments used include price support, border measures such as quotas, tariffs, input subsidies and other measures. The principle instruments for achieving agricultural policy objectives are price supports coupled with import restrictions including high tariffs, quotas and state trading for those items such as beef, corn and soybeans.

In the grain sector, domestic price support measures have been implemented by price support policies with import restrictions. In the livestock sector, border measures have been the major instruments used to support prices. Overall, the government has attempted to maintain prices above the market price level, either to encourage production or to improve farmers' incomes. In particular, imports have also been prohibited by special laws for the major commodities such as rice, barley, beef and other products. Thus domestic production has been encouraged by price support, import restrictions, and other price-related stabilization schemes.

In using these instruments, the Korean government has not fully acknowledged the role of market function which would help the efficiency of the agricultural sector. Many of the policies have focused on increasing prices and, at times have been contradictory to other policies. The erratic implementation of these pricing policies has led to an overall lack of economic efficiency, particularly when some of the pricing policies are

lack of economic efficiency, particularly when some of the pricing policies are contradictory and have been implemented in a piecemeal fashion.

1. Rice price support policy

As in many other countries, price policies play a very important role in Korea. Rice is by far the most important agricultural product in Korea, as was discussed in the earlier section. In 1993, rice accounted for about 30 percent of total gross value of agricultural production. Of the total grain production, rice accounted for about 85 percent, with barley, and other grain crops making up the remainder. Korea's rice policy lies at the heart of the Korean agricultural policy and it is still the leading agricultural industry in Korea. Thus, the Korean government has been involved extensively in the rice industry for decades.

Intervention in the rice market has generally been in pursuit of income and welfare objectives. It is estimated that price and income policies cover about 80 percent of total agricultural production in terms of output value. However, there is no comprehensive approach to the price policy covering all commodities. Each commodity is subject to a specific regime. The Agricultural Price Stabilization Law enacted in 1965 is the backbone of the general price policy. Based on this law and the Grain Management Law enacted in 1950, the later was enacted mainly for the purpose of ensuring enough rice and maintenance of rice prices at reasonable levels, the government has implemented several programs in order to increase farm income. Thus, the government purchasing system (a two-tier, dual price system) remains the basic instrument of price-support policy.

The primary purpose of this system was to enable the government to secure sufficient grain from farmers to stabilize the economy. The law also sought to ensure the orderly distribution of agricultural commodities through the market system. The form of government intervention in rice

and high prices the government implemented direct control over the rice policy, while in most periods the implementation took the form of indirect intervention.

The basic mechanism of price and income support policy has been buying and selling of agricultural products through the market. The functions and roles of this system have been adapted to match changes in social, political, and economic circumstances. In relation to price policy, the key policy objective has been to improve farm income and social equity between the farm and non-farm sectors. This includes high domestic prices for farm products, improved application of technologies, and improved institutional environment, and the provision of equitable access to skills, land and other assets. To help employment in non-agricultural sector, vocational training and educational programs have also been implemented.

The price support policy for rice has been the most important and expensive and was developed to guarantee the income of rice producers and to ensure high levels of rice production. In addition, price stabilization schemes have been developed for a number of commodities including rice, barley, beef, pork and dairy products. These policies maintain domestic prices within certain price bands. As a result, in recent years, prices in most agricultural products have been raised above world market levels. The prices received by farmers for most commodities covered by price support are based on production costs, government financial capability, some concept of income parity, and to some extent political and administrative consideration. It is commonplace for political influences to play a major role in the price setting process. This means that there is scope for political consideration, depending on the political climate at the time the prices are being decided.

The price set by these process is higher than that of market-priced level. Sometimes these type of price setting have slowed the adoption of

the policy, and lack of transparency. That is, most agricultural policy has focused on those policies prefering to support farm income through high food prices and a number of restrictive measures, rather than increasing efficiency in the farm sector. However, the existing price support policy for rice has become increasingly difficult to maintain. The price support regime which relied heavily on import restrictions will be changed as a result of the GATT agreement. In addition, keeping rice prices high are not well accepted by the general public, and thus pressure for reform in rice policy is too strong to be ignored. Moreover, with demand for rice falling slowly over time, the imbalance between supply and demand will increase, resulting in a higher deficit in the Grain Management Account (special account for grain purchasing) which has dominantly been financed by the government budget. Therefore, the cost of the rice intervention policy becomes one of the major factors hindering the development of the agricultural sector.

Government purchase system

The basic framework of the government purchase policy in Korea is to buy rice from farmers and sell it to consumers, which was also backed by a prohibition on imports. In periods of relatively low prices the government buys and stores the rice purchased from the farmers at preset prices, and during the periods of high prices the government sells it to the market.

Rice prices in Korea have fluctuated greatly so the system aims to normalize the flow and price of rice through the marketing system. Other goals of the food grain management policies include: to maintain a stable price structure for farmers, and to maintain farm incomes at levels which will put them on par with non-farm income levels. Most rice is either purchased by the government or marketed by rice merchants.

In practice, a large part of the rice crop is either consumed at the

farm level or marketed through private rice marketing channels. The farmers cooperatives(NACF) also plays an important role in collecting and marketing rice. The buying and selling of rice is determined by grade and quality, which is based on physical characteristics such as moisture content and the percentage of broken rice. The present grading and quality system has four categories(1st to 3rd, and off-grade). Grading is especially important because the grade presents differences of a physical nature, including moisture, weight, and color.

Inspection is conducted by the National Agricultural Products Inspection Office which has about 2,000 inspectors throughout the country, who inspect weight, packing, variety, etc. The rice inspection system plays an important role in standardization and quality improvement. The government purchases domestic grains in rough form only. These grains are stored in production positions and milled shortly before they are moved into consumption areas. State polished grains are released and distributed to private market retail stores registered to handle government-controlled grains.

Factors to be considered

Since the original Grain Management Law was enacted in 1950, the government has determined the purchase price level, the quantity, and the release price level through discussion and several decision-making stage. In deciding the price levels, several factors are considered, including policy objectives, the consumer price index, national economy, and government budget constraints.

Factors determining the supply side include the level of real farm income, the ratio between agricultural product prices received and paid by farmers, next year's supply of grain, and production costs. Factors determining the demand side include the level of real non-farm incomes, contribution to inflation as indicated by the price indices of food grains and

all consumer goods, and the level of per capita farm and non farm grain consumption. Other factors to be considered are the government's budget constraints, effects on the level of self-sufficiency and on the level of the deficit in the government's grain management account. In addition, a number of pricing approaches have been used to set the government's purchase price, including the parity concept, farm income compensation and government budget constraints. In fact, price setting is a political decision. During the political processes, weight is given to each objective, and the final decision is made by the top-ranking officials, including the MOFE and economic advisory staffs.

Price levels

Every year the government decides on the quantity and price of rice to be purchased after consulting with the Grain Marketing Committee (GMC). The GMC was established in 1989 to decide such issues and advise the government. The GMC is an independent committee made up of representatives appointed by the MAFF. This committee deliberates on the government's purchase prices and will continue to play an important role in the decision process of rice purchase prices, although its role is more consultative. The committee is composed of several representatives including representatives from various farm organizations, academics, and consumer organizations. Applying the GMC's suggestion is not compulsory but it is important because its recomendation is based on the decisions of several interest groups.

The purchase price for the second quality Japonica rice from the 1994 harvest was about $US 150(120,700 Won) per 80 kg sack and its release price was $US 126(101,000 Won)(Table 20). Over the past decades, the average purchase price paid by the government has been higher than the release price. Since the release prices are always below the purchase prices, a deficit has accumulated. The shortfall has to be financed

out of the government budget(Grain Management Account). This has generated a considerable deficit. The purchase price for rice differs for each variety.

Table 20. Purchase and Release Prices of Rice

Year	Sale cost(A)	Release price(B)	Purchase price(C)	Deficit(B-A)
	..... $ US/80 Kg (Won/80 Kg)			
1990	149(105,613)	78(55,520)	134(95,020)	-71(50,093)
1991	179(131,505)	125(92,000)	145(106,390)	-54(39,505)
1992	185(146,240)	122(96,600)	144(113,840)	-63(49,640)
1993	193(154,685)	120(96,600)	150(120,670)	-73(58,085)
1994	NA	126(101,000)	150(120,700)	NA

Note : Sale costs represent purchase price plus operational costs(Data are converted to $US on the basis of the average annual exchange rate for each year)

Source : MAI(1994). 1995 MAFF materials.

Quantity purchased

The quantity purchased differs from year to year depending on Korea's social, economic, and political situation. A large quantity of purchase in a given year does not guarantee the same or greater levels the following year. It is totally dependent on circumstances, including the farmer's level of income and demand. The government sets the amounts of the rice crop it will purchase, usually between 20 and 30 percent of production, to achieve both price stability and food security. The proportion of purchased rice in recent years has reached about 30 percent (Table 21).

Farmers' concerns in recent years have also shifted from the level of price to the volume of purchase. The grain purchased by the government

is mainly used as reserve in case of grain shortages. It is also used by military, government institutions, relief, and emergency programs. Most Koreans believe that direct government intervention in the rice market is necessary to maintain rice prices at stable levels, notwithstanding the fact that it will be undesirable from an economic efficiency standpoint.

Table 21. Quantity of Government-Purchased Rice

Year	Total Production(A)	Government Purchase(B)	(B/A)
	..... 1,000 MT		... percent ...
1980	3,550	545	15.4
1990	5,606	1,203	21.5
1991	5,384	1,222	22.7
1992	5,331	1,382	25.9
1993	4,750	1,437	30.3
1994	5,060	1,512	29.9

Source : MAI(1994). 1995 MAFF materials

Excess rice stocks

The government thus faces excess rice stocks caused by increased production and decreased consumption. By the end of 1993, the total rice carry-over was estimated to be around 2 million MT, about 35 percent of annual consumption. If the current situation continues rice stocks will continue to increase and it could create budgetary problems for the government. Policies to reduce rice production have been implemented, including cutting back the production of the Indica variety, lowering the level of the government procurement price, and reducing government purchases. In fact, the government stopped purchasing the Tongil variety in 1992. The New Agricultural Plan initiated in 1993 focused on reduc-

ing the quantity of government-purchased rice, narrowing the gap between the sale and purchase prices, and rationalizing of rice purchasing system. Other problem facing the government is the shortage of storage facilities. Most stocks are stored in NACF's facility(60%) and private facilities(40%). The storage costs are paid for entirely by the government.

An enormous government deficit

The prices at which the government sells rice to wholesalers are almost always below the prices paid to farmers. Since the shortfall has to be financed out of the government budget, the rice policy has been criticized strongly by the budget ministry. The total deficit incurred in grain management, including rice and other food grains, amounted to about $US 11 billion(8.8 trillion Won) at the end of 1993. The rice deficit alone accounted for about $US 9.7 billion(7.7 trillion Won), 88 percent of the total. In 1991, the grain management deficit was $US 1.44 billion, equivalent to 2.7 percent of government expenditure and 0.5 percent of GDP(TPRM, p.169).

Therefore, the price of government purchased rice was frozen for some years, or only slightly increased from one year to the next. The deficit arising from this system can be split into two major categories: the difference between the sale and purchase price, and the government handling costs. The administrative costs for the government to implement the rice purchases are also sizable. The Grain Management Fund was established in 1970, under the authority of the Food Control Act, to finance government management of basic food grains.

The deficit arising from this operation was largely compensated by inflationary financing. If funds for the deficit had been supported by the agricultural budget account, there would have been a reduction in expenditures in other sectors. Most of the deficit was financed through long-term grain bonds, and accordingly, the repayment of the bonds has been

financed either by long-term overdraft or the reissue of grain bonds. Financing rice deficit through this way contributed to the expansion of monetary supply, affecting the consumer prices. The large deficit was, however, considered as a structural and indispensable cost for maintaining the government control system. It would theoretically be possible to raise the selling price to a level equal to the cost price(the purchase price plus handling costs), so that no such deficit occurred. But if that were the case, the government could not maintain the quantities needed to stabilize the market, and would be confronted with severe opposition from farmers.

Reconsideration of the policy

The high level of support provided to rice growers has encouraged them to increase production even though Korea consumers are reducing their consumption. As a result the Korean government has had the problem of an unwanted rice surplus. Also, there is increasing public awareness of the growth in the volume of purchased rice, including the growth in the deficit on the Grain Mangement Account, as well as the effectiveness of the rice purchasing policy. While rice producers have benefited, government policy has imposed considerable costs on consumers and resulted in a misallocation of resources in the overall economy. The government also has to consider the difficulties of other sectors of the economy and there is less sympathy for the idea that the agricultural sector should be considered an exception.

Although the importance of the agricultural sector to the economy is recognized in the wider communities, pressure for improvement to the rice policy are becoming too strong to be ignored. In fact, it is estimated that the current rice price-oriented policy is considered unfair by most of the urban population who considered a 15-16 percent rise in the purchase price of rice irrational. It is clear that such a high rice price is against the

rice policy are becoming too strong to be ignored. In fact, it is estimated that the current rice price-oriented policy is considered unfair by most of the urban population who considered a 15-16 percent rise in the purchase price of rice irrational. It is clear that such a high rice price is against the interest of the majority of Koreans who are the consumers.

This high price level is evident when compared with the price levels of other countries. The Korean government's purchasing price levels are higher than those of Japan and the US. In 1994 the producers' price in Korea was almost 60 percent that of Japan, the most heavily assisted country, and five times higher than that of the US(Table 22).

Table 22. Comparison of Rice Price by Country

	Korea	Japan	USA	Thailand
	.....	$/tonne	.....	
1990	1,140	1,457	236	148
1993	1,136	1,888	236	127
1994	1,197	2,006	236	153

Source : MAFF(1995)

Per tonne producer's price for rice in Korea in 1994 was $US 1,197, while it was $US 2,006 in Japan and $US 236 in the US, reflecting the high levels compared to other countries. Governmental officials also have doubts about the effectiveness of the rice purchasing policy, and have suggested a more market-oriented approach. If the current over-supply of rice continues, the agricultural sector will face a serious problem and it will also restrict the successful accomplishment of the rice policy

However, apart from minor amendments, no specific new policies for rice have been foreshadowed. So far, Korean policy makers have refused to change major elements of the rice policy, despite the increasing pressure from both domestic sources and abroad. In recent years, the government has made efforts to reduce expenditures on rice following recommendations by many pressure groups.

The focus of the change in rice policy has been designed primarily to reduce rice production. The need for changes in rice policy is expected to increase because of the declining profitability of rice farming and uncertainties associated with the transitional process.

The comprehensive new rice program was initiated in 1993 in line with the "New Agricultural Plan" and is scheduled to last for the future. Furthermore, this change of rice policy will be accelerated by the impacts of the GATT agreement reached in December 1993. The broad objective of the program was to reduce the support for rice and decrease rice production. These have included: (i) narrowing the gap between the sale and purchase prices,(ii) rationalizing government handling costs, and(iii) other measures to reduce administrative costs.

However, to change the current rice policy completely would be very difficult and will likely cause some farm households to leave agriculture. In addition, the instruments used in rice policy are linked to other policies. Such linkages between industries have made change to the rice policy more difficult. But efforts to amend its implementation have been made over the past few years, and are likely to continue. For example, the government announced in 1992 that it would stop purchasing the Tongil variety of rice, one of the least preferred by consumers, and which makes up most of the government stocks. Thus, the Tongil variety rice, which was once called "miracle rice or the pioneer of the green revolution" is doomed to be phased out from Korea's paddy fields.

2. Livestock price stabilization program

Repid growth in the livestock sector

While rice remains the dominant crop, the livestock industry has substantially increased its shares in both food production and consumption. Output of beef, pork, and chicken have expanded rapidly during the last decade. Changes in tastes, lifestyles, and higher incomes have increased demands for livestock and caused a rapid expansion of livestock output. But it is not sufficient enough to meet the rapidly growing domestic demand, especially for beef. The government has been allowing beef imports since the later 1980s. The number of livestock farmers are less than grain producers, and conseqently they have less political power compared to rice producers. Other livestock, such as hogs and broilers are also very important sources of income, next to beef raising.

A. Two major elements of the livestock policy

The livestock policy in Korea currently contains two major elements; the scheme for stabilizing prices, and import quotas to help meet the price stabilization objective. Although the quota on beef imports is to be removed in 2001, the beef price stabilization policy is likely to be maintained, even if not in the present form.

(i) Price stabilization policy

Since earlier times, a price stabilization scheme has been used to reduce the volatility of the domestic prices of meat, but the results were unsatisfactory. In order to stabilize meat prices, the government traditionally subjected beef and pork prices to controls. The system linked the consumer prices of beef and pork to the price of live cattle and hogs in production areas as well as to the wholesale prices of carcasses at the auction market. However, meat prices failed to stabilize owing to illegal transactions caused by fluctuations in supply and demand and by the in-

adequate and underdeveloped market structure.

Several programs have been implemented and amended to stabilize the meat prices, but so far have proved unsatisfactory. Price stabilization through stock management in Korea is difficult to manage successfully because of the underdeveloped marketing system, insufficient information, and lack of sufficient financial support. The scheme has been modified several times but the basic approach has remained almost unchanged.

(ii) Price stabilization band

In an attempt to stabilize livestock prices(mainly for cattle and pig), the government sets a wholesale price stabilization band. The floor and ceiling prices are set on the basis of several factors including farm gate prices, consumer prices, production cost and farmers' income levels. In addition, the prices are determined after consultations with farm unions, and other farm bodies. Once the price bands are determined, the government or quasi-governmental LPMO(Livestock Products Marketing Organization) intervene in the market to keep the wholesale prices in the price bands by buying and releasing the cattle.

When the market price exceeds the miximum stabilization price, the government or LPMO sells its stocks. When the market price falls below the minimum stabilization price, the government buys livestock through the wholesale or local market. Livestock purchased by the government are sold when the market
price is above or within the stabilization price band in order to stabilize the domestic market price. In 1992, a total of 110 billion Won was supported for the operation of the price stabilization band program.

The actual buying and selling of imported beef is carried out by the LPMO with a somewhat complex mechanism. Prior to 1988, the LPMO's functions were carried out by the NLCF(National Livestock Cooperative

Federation). The LPMO was authorized to import and distribute beef with the cooperation of the National Livestock Cooperative Federation. The LPMO holds the exclusive right to import beef, to issue import recommendations in order to balance supply and demand, and to prevent the fraudulent circulation of beef in the market. The LPMO purchases beef in most cases by open competitive bidding in world markets. The quota is decided each year by the government. However, the system has not functioned well, for several reasons, such as underdeveloped
market structure, insufficient market information, changing consumer preferences, institutional behavior, and shortage of finances. In 1994, beef imports increased sharply while domestic cattle inventories also increased, but beef prices remined high throughout the year.

B. Beef imports

For much of the 1980s, the beef market in Korea was protected to boost the income of livestock farmers. But in the later 1980s, the government allowed beef imports under the quota system, because domestic production could not meet the rapidly increasing beef demand. Additional reasons included the protection of domestic producers and maintenance of wholesale prices at a reasonable level which can compensate the normal profits of transactions.

In fact, it was forecast that the liberalization of beef imports would lower the level of domestic production and the prices of domestic beef, and chicken. Additionally, in response to high demand for beef, and under pressure from trading partners, and to stabilize retail beef prices, the government allowed beef imports under the quota system. The import quotas were decided each year by the government in consideration with several factors including consumer prices, farm income levels and the initial quotas agreed by the trading partners. The government set a minimum import quota for the major suppliers. However, the actual beef im-

ports usually exceed the initial quotas. Although quota levels have fluctuated, beef imports have increased very rapidly from 1,000 MT in 1976 to 84,000 MT in 1990, and 120,000 MT in 1994 and it is expected to increase in the future.

Beef imports from 1993 onwards were subject to trade negotiations. However, according to the GATT agreement reached in December 1993, Korea had to lift all import restrictions by December 31, 2001. Beef shall be liberalized at that time with no quota and no LPMO involvement. For the interim period, Korea will maintain its import quotas.

The leading beef exporting countries to Korea are the US, Australia, New Zealand and Canada. Of the total beef imports(120,000 MT) in 1994, the US accounted for 51 percent(60,947 MT), followed by Australia 33 percent(40,276 MT), and New Zealand 14 percent(17,381 MT). Imports in 1995 are forecast to reach around 160,000 MT(Table 23). Many observers predict that the import market will continue to grow. The major beef exporting countries, such as the U.S, Australia, and New Zealand, continue to apply pressure to increase the beef quota. They have been demanding that the Korean government open its beef market completely.

Table 23. Beef Imports by Country

	Total	USA	Australia	New Zealand	Canada
	.....	.....	1,000 MT	.....	.....
1990	84,059	27,009	52,641	926	3,483
1991	115,000	43,062	59,047	12,834	57
1992	132,000	53,260	68,030	10,548	162
1993	99,031	43,281	42,824	12,653	273
1994	120,109	60,947	40,276	17,381	1,505

Source : MAFF(1995)

C. Pork and chicken

The price stabilization policy for pork and chicken has been operated by the livestock cooperatives including the NLCF, LPMO and other livestock cooperatives. The basic mechanism is a buying and selling system which functions according to the fluctuation of the market prices. The fund needed to purchase livestock products are basically provided by the livestock cooperatives themselves but government also supplies some fund to purchase livestock products in order to stabilize market prices.

Pork's share of the total meat consumption stood at 54.3 percent in 1991. Per capita pork consumption increased from 2.6kg per year in 1970 to 13.4kg in 1992. However, with beef in short supply and relatively expensive, pork has become increasingly important for the Korean diet. Part of the appeal of pork meat over beef is the lower price. Pork production increased sharply during the last decade. The government limits the number of hogs per farm to 1,000 total hogs to prevent any potential manipulation of the market mechanism by the large farms, but it was not rigidly enforced. Pork imports are tightly restricted but imports of canned pork were liberalized in July 1987. The NLCF purchases hogs or pork to stabilize prices and supplies. Other supports to pork producers include preferential loans for livestock producers.

Chicken consumption quadrupled over the last two decades, from 1.4kg in 1970 to 5.3 kg in 1992, due to income growth and an expanding processed chicken industry. The introduction of fast-food chicken franchises has created significant increases in consumption. The imports of fresh chilled and frozen chicken are highly restricted and subject to a 20 percent tariff. There seems to be considerable scope for further increases in the consumption of chicken. Eggs have long been used in Korean cooking, and consumption is increasing steadily. Domestic production of eggs is currently sufficient to satisfy demand. The chicken industry is mainly controlled by large operators.

D. The future of the livestock industry

Although the livestock industry's contribution to the gross national products was about 24 percent in 1992. In terms of production value, it plays an important role in the Korean agricultural sector, second in importance only to rice. The number of farmers raising beef, pork and cattle are increasing, and they have considerable political power relative to other farmers. In addition, the consumption of meat in recent years is steadily increasing and this trend is expected to continue in the future. The livestock industry enjoys powerful political support. This means that changing Korea's livestock policy is difficult. However, change will occur to the benefit of Korean consumers and the trading nations as a result of the Uruguay Round trade negotiations.

So far Korea is almost self-sufficient in pork, poultry, eggs and dairy products, while it must import about three-quarter of all its livestock feed ingredients. Output of pork, poultry, eggs and milk more than doubled during the last decade. The livestock industry is one of the industries the government is attempting to expand and has been identified as central to the future of Korean agriculture, although it has to cope with internationalization.

To cope with the rapid increase in beef imports, the livestock industry is moving away from traditional farming practices toward modernized and commercialized farming, with greater reliance on large sized operations. The sector is experiencing a shift from small to medium-sized production units. In addition, the government is concerned about pollution problems resulting from livestock farming. In rural areas, livestock wastes are treated improperly and are major sources of water pollution. Pollution can cause serious problems for Korean agriculture. Livestock areas in the vicinity of urban districts, even in the rural regions, suffer from the effects of pollution, particularly from livestock manure. New

regulations are being developed to deal with the problems of the disposal of livestock waste. Large-scale livestock farmers are now required to treat livestock wastes in a properly installed treatment plants. It seems that lower market prices and rising pollution costs will discourage livestock farming.

The livestock industry also acknowledges the need for increased efficiency in order to become internationally competitive. Several policies and measures are being implemented to cope with these situations. A comprehensive livestock policy was introduced in 1992. The "Long-Term Livestock Development Plan" emphasizes the importance of increasing competitiveness, at both governmental and farm levels. Effective farm mangement guidance, improved technology, promotion of feed grain production and construction of livestock facilities are all part of the plan. However, full implementation of the policy will take time and effort, and it will be hard to reconcile Korean livestock producers' concern about strong protection. Korea's concession to remove the import quota on beef by 2001 will lead the industry to unprecedented changes. Some existing livestock policies will have to be modified over the next decades in order to ease the adjustment pressures.

3. Marketing improvement program

Underdeveloped marketing

The agricultural market in Korea is relatively underdeveloped. Private dealers dominate the collecting activities, cooperative marketing is in its early stages, modernized wholesale markets are few, traditional retail and quasi-wholesale markets are prevalent, ununified varieties in packing, lack of grading and standardization, underdeveloped infrastructures including road facilities, gathering, storing, and distributing channels.

Marketing stages vary depending on the commodity, time, and region. The general channels for agricultural products are: producers---assemblers---brokers---whole salers(lagre markets)---jobbers---retailers (super markets)---and consumers. The presence of well-established supermarkets and lagre-scale retailers is increasing in large cities. The problem is that consumers frequently use neighboring dealers, who are regarded as inexpensive. Most of the products transacted by these dealers are not checked for food safety and evades regular marketing profits.

Marketing improvement

The government has implemented various programs to improve the agricultural marketing structure. Government policies aimed at protecting consumers and producers, and contributing to price stabilization and balanced economic growth. The major policy direction of agricultural marketing improvement are as follows: (i) to ensure a free, competitive market system, wherein prices are determined by the supply and demand mechanism, and competition prevails among traders, marketing firms and marketing channels, (ii) to focus on fair competition in the private sector and on improving social infrastructure, and (iii) to establish optimum allocation and distribution channels for perishable food products at minimum costs.

In 1994, the government issued a general and widespread plan "Marketing Reform Policy" to improve agricultural marketing in several ways. The focus on the marketing policy was to restructure marketing channels which had been considered underdeveloped. To meet the rapidly increasing agricultural marketing, it is necessary to establish modernized marketing system. Behind the government plan lay the belief that current tools, methods, and programs were no longer effective to meet the rapidly changing market situation.

The plan stressed improved efficiency and considerable improvement in marketing channels. For example, a compulsory auction system in the government-financed wholesale markets was implemented and some of the remaining government restrictions were removed. In addition, direct transaction from production to consumption area was carried out with some of the commodities. By 1998, the government will establish 34 public wholesale markets across the nation. Also, some amendments of the Agricultural Marketing Improvement and Price Stabilization Act were included in the plan.

(i). Enlargement of storage facilities

To increase farmers' power on the market, a joint shipping program mainly operated by farmers was undertaken for some areas, therby decreasing transport costs and villages were encouraged to form or expand joint production units. About 16,000 organizations were established at the end of 1993. The government provided special funds of about 373 billion Won in 1994 for the agricultural marketing improvement programs.

Storage facilities are necessary in production areas. They include collection and delivery centers, chilled storehouses, cold-chain storage, vehicles, and special utilities for the farmers. A considerable amount of funds has been invested in programs relating to market improvement over the past decades.

(ii). Construction of large scale wholesale markets

To enable the marketing network to handle the increased volume and variety of agricultural products, the government is modernizing markets. Construction of modern market seems to be the most important factor in Korea to ensure successful marketing activities. By 1994, there were 47 wholesale markets and 127 public auctions, although most of them are old fashioned, and underdeveloped. Several modern markets equipped with developed facilities including an auction system, and an automatic distribution center were completed in recent years. According to the long term marketing improvement plan, more large-scale markets are still needed for successful marketing.

(iii). Subsidiary measures

In addition to the physical construction of the markets, various institutional and administrative procedures are being amended to improve market efficiency. For example, a compulsory auction system for major products was introduced in 1992 in spite of strong opposition from market employees. An overall review of marketing regulations, licensing, and tax policies is currently under way and will be adjusted to encourage the timely flow of agricultural prodcuts through the newly developed marketing channels.

Additional measures include standardization of the transactions, auction units, and coding for major crops. A nation-wide marketing information system for the rapid distribution of transaction information was installed in 1991. The government is taking further measures to relax regulations on various marketing activities. By 1994, a total of 50 agricultural products and 30 fisheries products were transacted by the unified government trade units.

There are many factors affecting the development of agricultural marketing. Several policies must be implemented with the help of other

sectors, for example, the traffic system, roads, and trading practices. In addition, investments in infrastructure programs designed to eliminate marketing bottlenecks, which impede efficient market flow, must be increased. The extension of the use of processing, grading, and classification systems in agricultural marketing are equally important.

4. Land base improvement program

The land base improvement program has been regarded as one of the most important policy priorities in the agricultural sector, because it provides easy farming, increases land productivity and encourages farm mechanization. The current agricultural land base has been intensively utilized over the last two decades, with a strong emphasis on increasing farm land through various government program, including large-scale land development projects, irrigation, reclamation and drainage. The most important among these was a large scale land development project mainly focusing on a big river basin project.

A policy of developing and re-arranging land, including farm enlargement, was continued. Programs for improving irrigation and drainage systems and water control management facilities and techniques, were also undertaken. By the end of 1992, of the 1.3 million hectares paddy field, the land consolidation rate and drainage improvement rate were approximately 47 percent, and 46 percent, respectively.

Large-scale production projects have been undertaken since the 1970s. Twelve projects covering 110,000 hectares have been completed, and nine other projects were under construction in 1992. The total budget invested in the production base improvement program accounted for a large proportion of the total agricultural expenditure. The program included better living space programs($US 23 million), production base enlargement ($US 400 million), agricultural water development ($US 336 million) and a large-scale agricultural production base plan($US 98 million). So far the overall framework of these structural policies appeared unchanged, but the contents of measures and the main focuses have been modified considerably.

Priorities have been shifting : at first, the farm land enlargement program was given priority because the nation's basic need was to supply enough food. However, in recent years, the importance of a "better-living belt" has grown in accordance with increasing demand for a better environment in rural areas. In addition, measures to overcome the small size structures have been developed in line with the relaxation of the land holding limitation. Also, amendments to land-related laws and the establishment of a new system are
under consideration.

Notable policies for rural infrastructure include: a rural road improvement program to permit greater access to urban centers for people in rural areas and an even greater expansion in the marketing of modern farm inputs and services, programs to upgrade health and sanitation, energy utilization, education, transportation, communication, and cultural and welfare facilities in rural areas to improve the quality of rural living.

In addition, to provide the basis for the promotion and dispersion of agribusiness and other industries into rural areas, it is necessary to establish improved infrastructure in rural areas. In the long-run it may be a good way of obtaining a better geographical distribution of Korea's population. Many of these policies have been undertaken by the Ministries of Home Affairs, Health and Welfare, and Construction.

At first, they were implemented primarily through the Saemauel Undong(New Village Movement), launched in the early 1970s. The movement has brought major renovations to previously lagging rural areas. Villages have replaced their roofs, rebuilt walls, and improved their sanitation and irrigation facilities. This movement has improved the morale and spirits among farmers as they develop a greater sense of self-reliance, diligence, and cooperation in the rural areas. Therefore, in Korea it is difficult to pinpoint exactly the specific problems and find the solutions

within the agricultural sector. Since almost all of the issues are closely related to other sectors. Major programs have been undertaken by the Ministry of Agriculture, Forestry and Fisheries, while other ministries are also planning, budgeting, and executing
several rural-related policies.

5. Input subsidies

Input subsidies are not popular tools of agricultural support. In Korea these subsidies take a number of forms, including the financing of fertilizers and pesticides, loans of preferential rates, public funding of research and development, and support for storage facilities. A number of other measures include tax reductions for products used for agricultural purposes, preferential treatment for agricultural industries, and other related measures. Additionally, Korea has adopted a number of policy instruments based on short term considerations in response to market conditions.

A. Farm mechanization

One of the main changes in the Korean agricultural sector over the past thirty years has been farm mechanization, partly due to labor shortages in rural areas. In 1993, there were 799,105 power tillers, 76,800 tractors, 211,299 transplanters, and 67,677 combines(Table 24). Farm mechanization is strongly encouraged by government incentives because it enhances the productivity of labor and allows time to establish supplementary crops.

Much of the support was given to the mechanization industry including a low loan rate, price control, and joint utilization organization. Favorable loans were available to those buying tractors and farm machinery. Without these loan facilities it is difficult for farmers to operate normally. In 1993, the mechanization ratio of tilling and reclaiming reached 96 percent, transplanting 92 percent, pesticiding 95 percent and cultivating 87 percent. To meet changes in farm size and the types of crops cultivated, new farm machinery is being made available and manufacturing techniques for complicated farm machinery have been improved.

The government has developed a long-term farm mechanization plan

including joint utilization of farm machinery and a low funding rate. The joint utilization of farm machinery was established in order to use the machinery jointly. Since the costs of acquiring machinery have been too high for many farmers and the period of use is limited, farmers can use the joint machinery provided for them, reducing machinery operation costs. The number of these joint utilization units expanded to 43,000 by the end of 1993. In addition, the government has provided subsidies for farmers, and training programs for rural youth, and established local repair centers in rural areas.

Table 24. Agricultural Machine Holdings

	1980	1990	1993
	..... Number of machines		
Power tillers	289,779	751,236	799,109
Tractors	2,664	41,203	76,800
Rice transplanters	11,061	138,405	211,299
Binder	13,652	55,575	65,117
Combine	1,211	43,594	67,677
Power spraying	108,632	484,212	545,595
Grain dryer	1,616	17,749	31,963

Source : MAI(1994)

B. Fertilizers and pesticides

Fertilizer marketing has been under the control of the government. The government purchases fertilizers from the manufacturers and then sell it at a lower price to farmers. The deficit arising from the fertilizer program has been financed by the government. The actual supply of fertilizers was handled by the NACF, while management costs were supported by the government Fertilizer Deficit Account. In 1992, of the total deficit of $US 72 million(57.1 billion Won), about $US 56 million(44.1

billion Won) was financed by the government and the remainder by NACF. The accumulated total deficit resulted from fertilizer operation amounted to about $US 2.1 billion(1.7 trillion Won) at the end of 1992.

A total of 1.7 million MT of fertilizers were produced in 1992, a considerable increase of 137,000 MT from the provious year. Some 54.7 percent(936,000 MT) were utilized for non-agricultural purposes. Another 770,000 MT were used for industrial purposes or exported, mainly to Asian countries. In 1992, the total demand for fertilizer reached 1.3 million MT including non-agricultural consumption of 936,000 MT and carry-over of 412,000 MT to the following year. In terms of sales value, nitrogen(N) accounted for 50 percent(467,000 MT) of the total, phosphate 23 percent(218,000 MT), and potassium 27 percent(250,000 MT) in 1992. Total fertilizer exports in 1992 increased about 17 percent to an estimated 1.2 million MT($US 174 million), from 1.1 million MT($US 154 million) in 1992. Sales to Vietnam and China increased over 50 percent on a volume basis but only 20-25 percent on a value basis. Exports to all other markets declined. Thailand, Vietnam, and China continued to take the bulk of Korea's exports, accounting for about 75 percent of the total in 1991.

Korea's fertilizer industry imports almost all of its raw materials. Imports in 1992 reached 747,000 MT and increased about one fifth on a volume basis and one third on a value basis. Imports of potassium chloride came primarily from Canada(63%), former USSR(53%), and Jordan(14%). Tariffs on nitrogen and compound fertilizers have been lowered to 10 percent in 1992 and 9 percent in 1993, and will be reduced to 8 percent in 1994.

The pesticide industry produced some 29,000 MT of pesticides in 1992, most of which were used for rice insect extermination. Of the total, about 39 percent (11,163 MT) were used for rice in 1992. Others were

used for horticulture farming. The per hectare usage of pesticide in 1992 was estimated at 11 kg. In addition, there have been other programs for encouraging upland crops, such as funds for seeds and contract cultivation.

As Koreans have become more aware of the agricultural environment, there has been a growing concern about the use of pesticides and food safety. Thus the use of agrochemicals has been steadily under consideration of the general public. However, the use of chemical fertilizers has increased since the 1970s, due to their contribution to yields. Studies are being undertaken for the safe supply of agricultural products. In addition, a growing demand for pesticide-free products presents another challenge for Korean agriculture.

6. Research, technology and education

One of the strengths of Korean agriculture is the willingness of farmers to adopt new technologies. Korea's agricultural technology has made remarkable progress during the last two decades, particularly in the area of food grains. Because of the strong emphasis of government policy on increasing food grain production, the level, scope, and budget for the development of agricultural technology has increased considerably.

Agricultural research is carried out primarily by the RDA(Rural Development Administration), under the control of MAFF. The provincial RDA branch offices conduct field studies and guide research. About 1,200 researchers and approximately 1,100 extension workers are engaged in agricultural research and experiments.

In addition, some other institutes both in the public and private sectors participate in agricultural research. Areas of RDA research include: improving agricultural production, developing new agricultural hybrids, improving biotechnology, and improving plant and animal breeds. Theoretical agricultural research and general agricultural economic studies are carried out by the Korea Rural Economics Institute(KREI). About 200 competent researchers-most of them have MS or Ph.D.degrees-participate in the KREI agricultural policy studies.

With the rise in the income level, the consumption of processed food has been increasing in recent years. Companies involved in the food industry are generally small, depending heavily on foreign imports for their supply of raw materials. The Korea Food Research Institute(KFRI), established in 1989, is responsible for the development and transfer of new food techniques.

The development of high-yielding rice varieties was given high priority. Therefore, some excellent varieties, for example, IR 667, have been

developed. The new varieties of rice made a great contribution to achieving self-sufficiency in rice, which reached almost 100 percent in the 1990s. Attention was also paid to other crops including soybeans, potatoes, and certain special crops. In the livestock industry, the focus has been on improving livestock breeding, grass pastures for hilly areas, the possible use of Italian grass for winter paddies, etc. There is additional research on the utilization of by-products, high-yielding varieties of feed grain, and controlling livestock diseases.

In line with the changes in the country's agrarian structure and, in part due to the result of the recent UR trade negotiations, the role and priority of agricultural research are being altered. Research priorities are focused on the areas of (i)quality-oriented production, (ii)biotechnological production, (iii)introduction of new technologies which will improve nutrition, appearance, and sanitary conditions; and (iii)production of new exportable products. However, the actual investment for the study of technology has remained meager. The total budget spent by the RDA was about $US 118 million(93 billion Won) in 1992, 3.1 percent of the total budget in the agricultural sector. Thus, the government is trying to increase the R & D investment to 5 percent of the total agricultural budget by 1996.

The efforts include the development of some varieties with early-maturing, short-strawed, quality-oriented varieties of rice. At the beginning of the 1990s, agricultural policy makers began to discuss some major issues relating to the direction of research and development. Developing biotechnology and improving new varieties which are considered competitive in world trade were emphasized.

The focus of the study at that time was centered on several agricultural products regarded as potentially competitive after market liberalization. These items include apples, pears, oranges, swine, poultry,

and some fresh vegetables. It is anticipated that the expanded investments in research and development on new varieties will serve to promote agricultural production.

New farm technology is transferred to farmers in order to increase agricultural production and to encourage industry. Advanced farming technology is disseminated through continued training and educational programs at national, provincial, and country levels. Mass media including TV, radio, newspapers, and special magazines are also used to convey information on technology.

Education

Agricultural education is under the supervision of the Ministry of Education. There are about 20 agricultural universities, located in provincial areas in different parts of Korea. In the past, Korea ranked higher in the field of agricultural education. This situation, however, has changed very noticeably in recent years. Most high schools and universities with an agricultural curriculum have difficulty offering a high quality of education due to the lack of interest shown by the young students, insufficient facilities and lack of government support. Rough estimates indicate that about 10 percent of agricultural high school graduates return to farming. Agricultural related education is one of the less preferred areas in Korea, indicating that agriculture has lost its traditional importance.

Statistics

In Korea, the agricultural statistics have been collected mainly by governmental agencies and some have been obtained through administrative channels. The present statistical survey is mainly done by the statistical agencies under the control of MAFF. In 1994, about 2,000 government officials were working for the collection and analysis of the agricultural statistics. But the statistical service of MAFF concentrates

largely on gathering production data. Further analysis, development and application of agricultural statistics are needed to permit government to implement efficient policy.

Other facilities affecting agricultural production and marketing include communication, transportation and energy systems. In general, the rural infrastructure, especially roads, is inadequate by comparison with urban areas. However, in recent years, many rural development plans have been implemented to improve rural infrastructure.

7. Agricultural credit

Most agricultural credit system operations are carried out by NACF. NACF has responsibility for administering agricultural credit. It has been authorized to borrow from the government or the central bank for agricultural purposes. The government (MAFF, MOFE) determines the level of resources that will be used for NACF. NACF allocates credit to specific programs and activities in line with grovernment programs. Although the government's support for agricultural credit has expanded markedly, it has been insufficient to satisfy the rapidly increasing farm loans. Thus the rural credit problem has long been a major concern in the agricultural policy area and the level of rural credit in Korea is relatively low.

NACF is a private federation of cooperatives composed of farmers with deposit funds of its own. It was formed in 1961, and now consists of about 1,500 local cooperatives. During the 1970s and early 1980s, NACF relied heavily on government finances. Since the late 1980s, their dependence on government support has reduced gradually. NACF supplies farm credit, markets farm products, sells agricultural inputs, and provides guidance to farmers. It also allocates credit for specific programs and activities under government control, questioning the dispute of autonomy.

In recent years, NACF has expanded its activities into other sectors, such as the finance and credit sectors. In fact, NACF handles everything related to farming activities and life of farmers. The overall result is a reduction in NACF's dependence on government funds. NACF is primary a source of credit in rural areas, and by 1992 almost every city and county in Korea had at least one NACF cooperative. It also has the sole responsibility for administering the government's agricultural loans. In fact, much of the credit is subsidized by the government.

Today, NACF possesses political power and enjoys various rights and interests granted by the government. The role of NACF in providing ser-

vices to the farmers has been increasingly questioned. Challenges are mounted against the power of NACF, because it has sought to protect its own interests, which in part differ from the interests of individual farmers. In addition, NACF is criticized by the general public because it has placed too much emphasis on financial activities, rather than on the areas including agricultural marketing improvement, rural infrastructure improvement, and increasing individual farmer's incomes. Other organizations concerned with agricultural credit and policy are the National Livestock Cooperatives Federation(NLCF) and the Agricultural and Fisheries Marketing Corporation(AFMC). The NLCF was established in 1980 and has the authority to provide livestock development loans to its members. The AFMC, which was established in 1968, provides farmers and food industry operators loans for the development of agricultural processing, marketing, and price stabilization.

8. Budgetary outlays on agriculture

It is difficult to calculate precisely total expenditure on the agricultural sector. Much of the budget was spent on the agricultural sector by other ministries, and much of the expenditure was indirect. In addition, local government also devote public resources to agriculture, operating at the provincial and county levels. Information from different sources do not always agree. Despite this, the budget data provides a picture of policy direction and magnitude of government expenditure on agriculture.

According th the central government budget data provided by the MAFF, the total agricultural budget in 1995 is about 8.2 trillion Won, 38. 1 percent above the 1994 budget(Table 25). The 1994 agricultural budget of 5.9 trillion Won accounted for about 10 percent of the total national budget.

Table 25. Budget of MAFF in Korea

	1994	1995
	····· 100 million Won ·····	
Total	59,700	82,438
Production base improvement	10,189	14,341
Agricultural mechanization	3,369	4,024
Land reclamation	4,401	6,629
Agricultural water development	1,448	2,256
Marketing facility enlargement	970	1,921
Wholesale market construction	482	630
Manpower development	3,039	4,239
Technology development	363	409
Livestock programs	1,673	2,220

Source : 1995 MAFF budget data. Note : The budget figures vary according to the range of programs, calendar year, and inclusion of special accounts.

The budget on agriculture has increased steadily in the 1970s and 1980s. In value terms, the MAFF budget accounted for about 10 percent of the total government budget during the period 1990-1993. The proportion of the MAFF budget to the total national budget has continued to increase gradually, from 5.3 percent in 1975 to 5.7 percent in 1980, and 9.7 percent in 1993, remaining stable at around 10 percent in the mid-1990s.

The total agricultural budget of around 8.2 trillion Won in 1995 can be divided into the following major sectors; expenditure on agricultural production base improvement(1.4 trillion Won), agricultural mechanization(402 billion Won), land reclamation(662 trillion Won), agricultural water development(226 billion Won), and manpower development program(423 billion Won). Other expenditures in 1995 includes livestock programs, research and
developments, and rural living conditions improvement programs.

Of the total agricultural budget, expenditures on structural adjustment have been the largest share and have grown from about 23 percent in 1990 to nearly 30 percent in 1992. Expenditures on income-compensation areas, amounting to $US 1.3 billion(1,024 billion Won) in 1992(31% of total MAFF budget), made up almost one-third of total MAFF budgets. This type of expenditure has been the major component of the MAFF budget, although it includes several categories of policies. This kind of expenditure is planned to decrease in 1995 onwards as priorities and policy directions change toward increased efficiency and market orientation, rather than income compensation support.

III. Recent policy changes

1. Structural problems in the Korean agriculture

Korean agriculture has been dominated by small farms, which still account for over 50 percent of total farms. Structurally, resources available have been limited to some degree. Farmers concentrated on production of rice, to lesser extent, livestock, fruits and vegetables. Problems facing Korean agriculture include an overall declining role within the national economy, decreasing farm numbers, relatively low farm incomes compared to urban dwellers, price and income instability, and high production costs. These problems are similar to those in other countries, and thereby are issues faced by agriculture policy makers worldwide.

The most serious difficulties for Korea are small size farms and dominance of rice cultivation. Approximately 60 percent of Korean farms are less than 1.0 hectare, 30 percent between 1 and 2 hectares, and 10 percent over 2 hectares. In addition, only 47 percent of all paddy fields have been consolidated and the irrigation rate remained at about 46 percent in 1992. Moreover, farm land continues to be converted for other uses at a rate of almost 10,000 hectares per year. A more serious concern is that the farm labor force is deteriorating both in terms of quantity and quality, as is reflected by the fact that farm laborers over 60 years old increased from 7.8 percent in 1970 to about 31 percent in 1993.

Farm income, on the other hand, is heavily dependent on farm production sources, especially on rice, accounting for around 30 percent of total production value. Opportunities for non-farming jobs are limited. Although, nominal farmers' incomes stood at about 95 percent of that of urban employees in 1993, the standard of living in rural areas lagged far behind that of urban dwellers. The poor rural living conditions have accelerated rural-urban migration and resulted in a shortage of rural farm-

ing laborers.

These problems are often seen as structural and attributed to misguided government policies. Farmers argued that many of Korea's agricultural problems could be traced to government programs which favored the industrial sector. An industry-led, export-oriented development strategy has dominated for more than three decades, resulting in poor performance in the agricultural sector. There are also problems which are more socioeconomic rather than simply agricultural policy issues.

Overall, agriculture in Korea has developed considerably over the past decades. However, compared with the industrial sector, there is a long way to go. Although Koreans generally recognize the importance of the rural sector and place great emphasis on farmers, the continuous increase in rural expenditure compared with other sectors has not met with popular support. In addition, the most important policy instrument, the rice purchasing system, is costly and has some negative effects on the general economy. Similarly, too much spending of the government budget on agriculture has not been widely
supported. The government has acknowledged that constantly escalating farm prices to maintain agricultural income parity is not desirable in the long run. The structural problems created in a period of strong government intervention can not be rectified in the short term without high social, political and economic costs. Thus, there seems to be a need for a longer transitional period.

2. Need for further reform

Korean agriculture is facing many problems and issues both at home and abroad. Many problems are inherited from previous decades and are complex to solve because they are structural and closely related to other sectors of the economy. This makes it increasingly difficult for the agri-

cultural sector to change, but it is imperative to reform the existing agricultural policies as Korean agriculture enters a new phase within a changing economy.

Much of this need comes from concerns about the future of the Korean agriculture. Although foreign factors were important in instigating the changes in the Korean agricultural policies, domestic forces have also been responsible. Need for reform from internal pressure is by far the most important catalyst for changes in the agricultural sector.

Internal pressure

The economic importance of agriculture in Korea is decreasing annually both in terms of its contribution and of numbers employed. The agricultural sector contributed about 7 percent to the gross national product and employed about 12 percent of the labor force in 1994, while in 1980 they were 32 percent and 15 percent respectively. Despite strong and extensive support given to the agricultural sector, its productivity lags far behind the other sectors.

During the period between 1960s and 1980s, economic growth has also affected the agricultural sector in several ways. It has raised demand for food and led to changes in the dietary pattern and employment structure. Income growth had a big impact by shifting consumption patterns away from food grains toward livestock products and other products. Imports of these high-value and processed agricultural products are growing rapidly. Industrial growth has also caused resources to be drawn from agricultural to the industrial sector, as is reflected by the fact that the aging farm population could lead to a change in the farm structure. Farmers wishing to remain in agriculture decline and lack of appeal to young farmers in the future will accordingly result in the change of labor structure.

In addition, supports from other sectors have decreased. Wage and salary earners in urban areas who are not connected with agriculture are demanding improvements in the agricultural sector. For those who have not inherited a relationship with the agricultural sector, the high government support for the farmers seem to be undesirable.

Demand for reform is also underway in the land sector, with growing demand for land for non-agricultural uses, including housing, roads, and other industrial purposes. Also, some agricultural industries receive higher levels of support than others, increasing their demand for inputs. This indicates that the less protected industries face higher costs of production and reduced output, and consumers face higher prices.

Piecemeal, and price-support oriented policies

Many of the agricultural policies have been developed in a piecemeal fashion. At times the policies are complex and sometimes contradictory. Many lack transparency, and methods of implementing agricultural policy are inappropriate, resulting in very high cost to the Korean economy. As a result agricultural policies have reduced the overall efficiency of the sector and have hindered agricultural development.

In addition, price support through increased prices is output based, thus, this has benefitted farmers who own the larger parcels of land. Government policies have favored income support, instead of economic efficiency and there is a growing concern about the future of Korean agriculture.

Pressure from foreign factors

A key feature of Korean agricultural policies has been the use of border measures to restrict imports. The government continues to protect and assist farmers through import restricitions, despite threats of foreign retaliation against Korea's manufactured exports. Thus, extensive use of

import restrictions has faced pressure from foreign trading partners. Although the government has relaxed a lot of import restrictions and reduced significant tariff rates, the major trading partners, including the US, Australia, Canada, New Zealand, and the EU, continue to apply pressure on Korean agricultural markets to liberalize more products. Prices of most domestic products have been kept well above international prices, and thus the agricultural policies have been very costly to Korean consumers, taxpayers and industries.

These changes and other pressures indicate that agriculture should move in the direction of less cost, improved efficiency, transparency and consistency, and market-orientation. There is a growing concern about the future of Korean agriculture. Most have recommended general and widespread reform of agricultural policies based on market-oriented direction with competitiveness in world market. This will be accelerated in line with the GATT agreement.

3. New policies

New policy directions

Against the needs for changes in policy, and in particular, in order to ease adjustment, the government has responded to domestic and international pressure for agricultural policy reform. A new agricultural policy was initiated from 1991 onwards, focusing on more market-orentation. Growing concern from both the agricultural sector and other sectors about the future of the Korean agriculture has made the government change its basic policy direction for agriculture, from a price and income support-oriented to a market, competitiveness and efficiency-oriented policy.

The Korean government has made considerable effort to solve present-day agricultural problems. However, the policies continue to focus on

subsidizing farm incomes rather than increasing economic efficiency. Some programs have been revised several times to bring them into conformity with farmers' demands and wishes. However, most of the policies have been implemented through a set of government price stabilization schemes, thus have had limited success.

Except for self-sufficiency in major products and relatively high farm incomes, the policies may have been unsuccessful. Therefore there is a growing feeling among policy-makers that further structural adjustment in agriculture will have to be implemented. As new objectives, such as improving rural living conditions, preserving rural environment and preparing agricultural liberalization emerge, new policy instruments are needed to meet these objectives.

Methods of accomplishing this structural adjustment include further promoting farm mechanization, facilitating the development of the food processing industry, and relaxing regulations on various administrative measures. More specifically target income support policies combined with policies to foster the development of an efficient and competitive agricultural sector could be more successful.

A. Structural adjustment policy

In late 1991, the government announced a $US 55 billion(42 trillion Won) ten-year plan "Agriculture and Fisheries Restructuring Plan" to improve efficiency in agriculture and rural living conditions. The underlying basis for the plan lies in the belief that significant structural adjustment is necessary to prepare for the changing agricultural policy environment. The basic purposes of the plan are to improve agricultural productivity and to enhance competitiveness in the agricultural sector. The plan gives major priority to the land reform program, which is believed to be the center-piece. The major contents of the plan are to transform the current system of "absolute and relative land" into "agricultur-

al promotion zones", to make investment easier and to grant certain tax exemptions. The modification process is to be intensified and about 1.1 million hectares are expected to be designed as "Agricultural Promotion Zones" under this plan. The farm size limitation of 3 hectares, including regulations on land use, will be relaxed under the new plan.

In addition, self-employed young farmers within agricultural promotion zones will be allowed to own land up to 20 hectares, rather than the 3 hectares, the currently allowed by law. Other major programs include mechanization, automation, distribution improvement and diversification of farming crops. Special job training programs will be provided for those who wish to leave farming or hold multiple jobs. In addition, a special retirement program and welfare plan will be provided for future migrants, who wish to withdraw from farming. For those young farming successors, special long-term credits, new technical know-how, and practical training programs to study advanced farm households at home or abroad will be supported by the government.

Attention was also given to other programs including: concentrating on major strategic products which are to be competitive after market liberalization; establishing commodity specific laboratories and research centers; spending on agricultural education; improvement of distribution systems; strengthening local and provincial government roles and export organization, and the improvement of rural living conditions.

Of the total $US 55 billion(42 trillion Won) fund, about $US 47 billion(36 trillion Won) will be spent on restructuring the agricultural sector and the remainder on programs to increase rural income and quality of rural life. Also a considerable proportion of the budget will be spent on land reorganization, consolidation, and irrigation. At first the program got a cool reception due to financing uncertainties throughout its projected life. Some observers remain skeptical about the plan. In general, more

market-oriented agricultural policy will be adopted to increase the efficiency of the sector. These policies were effectively backed up by the special law(Agricultural Development Act) enacted by the National Assembly.

B. New Agricultural Plan

The new government which took office in February 1993, emphasized the importance of econmic vitality in the national economy. A "New Agricultural Plan(NAP)" was announced on June 24 1993, in line with the "New Economic Plan". The government aims to create more efficient and competitive agricultural sector through the operation of the New Agricultural Plan. The primary goals of the NAP are to make the agricultural sector more competitive, to increase farmers' expertise to help them adjust to liberalization, and to improve rural living conditions.

In order to achieve these goals, the government has focused on the following programs: farm mechanization, promotion of high-value crops, maintaining farm population, and promoting exports of processed agricultural products. The issue of land use is being given high priority under the plan. Attention was also given to programs intended to restructure institutional reforms in the agricultural sector. Unnecessary regulations and restrictions inhibiting ecnomic vitalities will be abolished. Widespread changes are now underway in the agricultural sector.

C. Agriculture and Fisheries Development Plan

In 1994, the government issued a new plan " Agriculture and Fisheries Development Plan(AFDP)", following the NAP. Increasing concern from the rural dwellers about the future of their life has made the government establish new policy, focusing on more welfare-oriented program. The plan focuses on the restructuring of different farming types, especially in the rice, livestock and horticulture sectors. Many regional

and commodity organizations will be established to increase the effectiveness of policy. In order to minimize the decrease in farm income due to the change of rice price policy, the government is considering a commodity loan program for rice and a direct income payment to farmers.

Other programs include: improvements in the marketing system, modernization in farm mechanization, enhancement of rural welfare, and internationalization of the agricultural sector. It is expected that the Agriculture and Fisheries Development Plan(AFDP) will require a considerable budget as well as changes in agricultural institutions. To support the plan effectively, the government established a special tax, which targeted collecting a total of 15 trillion Won, in addition to the previous 42 trillion Won investment schedule.

Several programs are being considered, including the adoption of quality-oriented farming system, differentiation of price levels by region, and vitalization of market functions in the private sector. The plan also emphasizes relaxation of the land utilization system, permitting more flexible use of land.

Many section of the program are not significantly different from previous agricultural programs, with the major exception of the planned change in the rice price system. The gap between grain purchase and selling prices will be lowered gradually and new income-compensating programs will be developed in step with the changes to the grain purchase policy.

The Agriculture and Fisheries Development Plan is important for Korea as it provides a basic framework for policy making and implementation. It also prevents arbitrary interference in the agricultural sector, as was common in the past. It also may reduce uncertainty. To a certain extent, the success of the plan will depend heavily on what happens to the rice sector.

So far the plan has attracted attention among Korean farmers, possibly because of the certainty of the financial support. Indications from the second implementation year of the new plan support this optimistic outlook. However, there remains doubt about the MAFF's ability to obtain the necessary amount of funding and maintain it throughout the life of the Program. The full implementation of this plan will depend upon how quickly and sufficiently the govenrnment can provide the financial support for the plan.

On the other hand, with the launch of the new WTO(World Trade Organization) scheme in 1995, imports of some products would increase sharply as agricultural trade is being liberalized under the WTO scheme. The government is implementing several programs to minimize impacts of imported goods on the local market. Notable among the measures are production adjustment program, special safeguard provisions, import license auction program, and state trading policy. For example, a 350,000 sok(51,000 MT) of rice will be imported by the Office of Supply in 1995 under the state trading measures.

The political aspects of the plan have been addressed and the debate of the new program in the farm organizations has been heated. The process has been slow because of the hesitancy of the politicians who recognize the fact that a high percentage of Koreans still have relatives on farms or in rural areas and do not want to see them hurt by changes in policies. Therefore, implementing the Agriculture and Fisheries Development Plan will be a lengthy and complex task because of the complicated situation arising from both the policy making process and its implementation.

4. Impediments to reform

Although agricultural reform is highly desirable from viewpoint of economic welfare and efficiency of resource use, it would not be easy to change the agricultural policy, because agriculture in Korea has special status compared with other sectors. Many farmers think that Korea's remarkable economic success has come about at the expense of agriculture, and blame the current agricultural problems on the liberalization of agricultural imports and biased government policies

In addition, farming is still regarded as an important sector and there is strong support from the general population for special measures for the farm sector. Korean farm households have been an important force for many years, although their influence has declined in recent years. The basic dilemma for Korean agriculture is that, while wanting to create market-oriented agriculture, there has been increasing pressure to provide more support. Farmers do not want either domestic or foreign forces to hurt Korean agriculture.

On the other hand, consumers' tastes are changing, as is reflected in the fact that they are choosing higher quality, better packaged imported products, and are willing to pay higher prices for them. The strong political power of the farmers and close rural-urban family ties have impeded more significant changes in the agricultural sector. This means that pressures for greater support and protection of Korean agricultural market are growing. Thus reform will take considerable time and the government has to consider the realistic options open to them. Therefore, while many Korean policy maker as well as private farmers have acknowledged the need to reform, few changes have been made.

Part Ⅳ

EVALUATION OF KOREAN AGRICULTURAL POLICY

--- Compared to the industrial sector, Korean agriculture is at an early stage of development, with small farms, an aging farm population, a labor-intensive structure, low productivity, and a relatively underdeveloped agricultureal market system --- Agricultural Outlook, March 1993. USDA

I. Strong government intervention

Government intervention in agricultural policy takes a variety of forms, often vaguely specified. In Korea too, intervention has taken various forms, including price support, border protection, input subsidies, and other measures. At times, they are vaguely worded and designed primarily to achieve certain national goals. Among these goals are ensuring an adequate food supply, stable producer and consumer prices, and an equitable standard of living for the rural dwellers.

In general, the most common types of government intervention policies in Korean agriculture have been price and income support. Korea's agriculture has been heavily protected by the government since the late 1960s. Farmers have been extensively assisted by the government through price support, input subsidies, and import restrictions.

It is difficult to measure accurately the effect of these policy instruments, however, it would be proper to say that they have created significant economic losses for the Korean economy, though they have successfully supported farm incomes. A full evaluation of agricultural policy is difficult because the effects of policies spill over to other sectors, and much of agricultural support are provided by other ministry including Ministry of Construction, Ministry of Health and Welfare, and Ministry of Home Affairs.

Several kinds of measures discriminate in favor of agriculture, and are additional obstacles to the development of the agricultural sector, to

some extent. Because their operation and influence on the agricultural sector are additional impediments to improve farm efficiency which in turn reduces competitiveness in the world markets.

There is also a certain degree of interdependence between the instruments used in agricultural policies, and this has resulted in undesirable effects on the Korean agriculture because such linkages have made the agricultural policies more difficult to adjust. Thus the economic costs of such a high support level would be a burden and, it may be clear that strong government intervention has been critical to the sound development of the agricultural sector.

1. Assistance to farmers

Several measures to assist the agricultural sector have been undertaken to achieve Korea's agricultural goals, such as food self-sufficiency, food security for major crops, and greater parity between rural and urban incomes. Of the extensive government support to the agricultural sector, some of the support is measured by budgetary outlays, while much of it does not appear in the government budget. In addition, there are international consequences of agricultural policies, because world agricultural markets are very closely interrelated and thus result in some changes in resources. Here, for the simplicity of the study, only some assessment including nominal rate of protection, producers and consumers subsidy equivalents are provided.

Much has been written on Korea's extensive goverment intervention in the agricultural sector. According to the USDA reoprt "South Korea's agriculture, moving toward self-sufficiency for rice and other farm products, has been heavily subsidized by the government since the late 1960s. Much of Korea's protction for agricultural products has come from trade restrictive measures(USDA. 1988)". A more specific statement is that: " The South Korean Government provides very high levels of assistance to

agricultural producers while heavily taxing consumer. Assistance to producers in 1987-89 was about double the level in the United States, 1.6 times that of the European Community, and nearly 80 percent of Japan, the most heavily assisted developed country(J.A. Evans.1991).

Price support and import restrictions are the dominant types of assistance to farmers in Korea. It is estimated that about 90 percent of the assistance to agriculture is derived from price stabilization schemes, supporting prices that are high by international levels. These price stabilization policies are carried out either directly by the government or semi-public organizations, including the National Agricultural Cooperative Federation(NACF), the Agricultural and Fisheries Marketing Corporation(AFMC), the National Livestock Cooperative Federation(NLCF), and the Livestock Product Marketing Organization (LPMO).

On the import restriction side, the assistance schemes are normally supported by traiffs, quotas, and other import barriers. The import licensing requirements, either under the Import Notice of restricted items or under an individual law, are applied in products such as cereals and beef. Thus, the range of agricultural products allowed free entry into Korea is very narrow. They are subject to special laws such as the Grain Management Act and the Feed Management Act which give the government ultimate authority to approve
or deny import licensing, althouhg most grains and feed products are in the category of "automatic approval" items. Midyear quota adjustments are possible depending on prevailing market conditions.

In recent years the number of commodities that could be freely imported into Korea increased rapidly as a consequence of import liberalization. It is estimated that about 90 percent of the total munber of commodities can be imported freely. In 1994, of the total number of 1,867 commodities 1,725 items were allowed free entry, and the remaining

Farmers also benefit from input subsidies, such as "balanced fertilization plan". The government supports NACF losses incurred in fertilizer transactions. Additional assistance is also provided through cental government budgetary outlay for development programs, including for soil improvement, irrigation and infrastructure. In addition to marketing intervention and border measures, the government has been involved in a number of other agricultural programs such as the coordination of research and extension, and training and education of the farm labor force. Overall Korean producers are heavily assisted by government policies, and thus pervasive intervention in agirculture is consistent with the objective of agricultural self-sufficiency, higher rural living conditions, and agricultural development.

2. Nominal rate of protection

The level of protection in Korea has incerased steadily since the early 1970s and continues to be relatively high. According to the measurement of nominal rate of protection(NRP, the ratio of the difference between the domestic producer price and the international price, to the international price), Korea's NRP has increased significantly.

According to the report recently submitted to GATT, "Korea's assistance to agriculture has grown considerably. With the declining importance of agriculture in Korea's production structure, the pattern of assistance to agriculture has moved from effectively taxing the sector to progressively increasing assistance to farmers. In 1960, the nominal rate of agricultural protection was in the order of -15 percent; by the early 1970s, the rate was some 30 percent and since then has grown further to a level estimated at over 100 percent in 1988"(TPRM.1992). Prices of the major agricultural products in Korea will show the high NRP in Korean agricultural products.

Difficult to compare

Price levels for agricultural products vary according to time, place, and surveying institution, and at times they are volatile, because yields vary from year to year as a result of weather conditions and the presence of disease. Substantial seasonal and regional differences exist in agricultural production prices in Korea, and the variability is greater for vegetable products. Therefore, it is difficult to make an accurate comparison of domestic and international agricultural prices, because foreign exchange rates fluctuate, and the quality and standard of food vary greatly from one country to another. Data should be used carefully in Korea.

However, it is true that the price levels in Korea are higher than international agricultural prices. The rice price is almost six times the world prices. Reasons for the gap include limited resource availability, the high cost of production, high land prices and labor costs, strong governnment purchase prices, and specific consumer demand for Korean foods.

3. Producer and consumer subsidy equivalents

A. Producer subsidy equivalents

The combined effect of both budgetary and non-budgetary assistance measures are captured in the indicator of producer subsidy equivalent (PSE) and consumer subsidy equivalent(CSE). A PSE is defined as the subsidy that would be necessary to compensate producers for removing government support. The OECD defines PSE as the value of transfers from domestic consumers and taxpayers to producers resulting from a given set of agricultural policies(OECD. Agricultural Policies, Market and Trade. 1993). Expressed as a percentage, it is the ratio of the total value of transfers to producers as a result of government policies to total producer income. A positive PSE indicates producer assistance while negative PSE indicates producer taxation.

In Korea, PSEs and CSEs have not officially been measured for agricultural products. However, some of the estimates calculated by USDA showed that Korea's farmers received a relatively high level of government support. According to recent USDA calculations, assistance to producers was particularly high for rice, barley, corn, soybeans, and beef. The total transfers to producers decreased from 8.5 trillion won in 1990 to 8.3 trillion in 1991. The percentage PSE which measures support as a percentage of value of production, fell from 74.7 percent in 1990 to 71.2 percent in 1991(Table 26).

Table 26. PSEs and CSEs for Major Korean Agricultural Products

	Producer subsidy equivalents			Consumer subsidy equivalents		
	1989	1990	1991	1989	1990	1991
percent PSE and CSE						
Commodity	..... percent					
Rice	86.2	91.8	88.5	−81.4	−91.1	NA
Barley	81.0	90.6	91.5	-64.2	-66.5	NA
Corn	84.5	90.2	94.1	NA	NA	NA
Soybeans	97.9	111.4	106.2	-81.4	-81.1	NA
Beef and veal	82.2	81.2	76.5	-73.9	-71.8	NA
Pork	-29.5	20.5	15.2	-14.0	-11.3	NA
Chicken	28.2	26.8	39.6	-48.1	-36.3	NA
Eggs	49.5	41.5	20.2	-39.7	-24.8	NA
Milk	65.9	62.7	69.3	-76.4	-82.1	NA
Average	68.7	74.7	71.2	-74.5	-64.2	-63.5
Total transfers to producers			Total transfers to consumers			
	..... $ US million					
	10,737	12,085	11,305	-16,334	-11,007	-11,332

Source : Unpublished USDA report, 1993.

According to the USDA report, the average PSE for the 9 commodities in Korea in 1991 was 71.2 percent, indicating that the value to farmers of government programs and border measures was about 71.2 percent of farm income. The estimated percentage PSEs were relatively high in 1991 for rice(88.5%), barley(91.5%)) beef and veal(75.6%), corn(94.1%), soybean(106.2%), and milk(69.3%). As rice is given great weight in the Korean agricultural policy, the PSEs have been higher. Assistance to soybean producers, indicated by a PSE of 106.2 percent, was higher than the levels for rice and barley. The PSEs were relatively low in pork (15.2%), chicken(39.6%) and eggs(20.2%). The lower rates to livestock producers were partly explained by the grain-oriented government support policy.

J.A Evans's study showed that rice producers received 90 percent of their assistance between 1987-1989 from price intervention policies. Goverment budget outlays constituted the remainder(10 percent), with infrastructure support and marketing assistance most important. According to a recent OECD publication, the producer subsidy equivalent is greater in Korea than in any other OECD country and twice that of the average OECD country. The subsidies are largely financed by consumers with the result that consumer prices for the ten considered products are over three times higher than world market prices, a level that is exceeded only by Finland in the OECD area(OECD Economic Survey, Korea. 1993).

B. Consumer subsidy equivalents

A CSE is defined as the amount that would need to be paid to consumers to compensate them for the effect of removing agricultural programs. The OECD defines CSE as "the value of transfers from domestic consumers to producers and taxpayers arising from a given set of agricultural policies over a specified period"(OECD, 1993). Expressed as a

percentage, it is the ratio of the total value of policy transfers received by consumers to total consumer expenditure on the product. CSE can be positive(net assistance) or negative(net taxation).

In terms of the CSE, Korea was a high taxer of consumers of agricultural products by OECD standards in 1991. The total transfers to consumers in 1991 was 8.3 trillion won, up from the 7.8 trillion won in 1990. The average percentage CSEs for 10 commodities was about 64 percent in 1991, but has declined recently from 74.5 percent in 1989 and 64.2 percent in 1990. The percentage CSEs were high in 1991 for milk(82.1 %), soybeans(81.1%), rice(77.9%), beef and veal(71.8%). For chicken, eggs, and pork, the CSEs were relatively low, accounting for 36.3 percent, 24.8 percent, and 11.3 percet, respectively.
This indicates that Korean consumers are heavily taxed by domestic agricultural policies, especially in soybeans, rice, milk and beef, as measured by the aggregate consumer subsidy equivalent, resulting in higher consumer prices compared to world prices. Overall government assistance to producers, averaging 71.2 percent in 1991, were more than consumers were taxed(63.5 percent).

Further work would be required, however, for a complete and up-to-date evaluation of the overall cost to consumers and taxpayers. However, partly in response to international pressures, the Korean government has reduced certain tariffs, and has relaxed import bans and restrictions on many agricultural products. It is unlikely that the Korean government will reduce its support for agriculture in the near future.

II. Agricultural performance

Despite several problems, Korean agricultural policy has achieved a certain success in ensuring key objectives. Total agricultural production has increased due mainly to the development of technology, farm mechanization, new varieties of crops, and increased investment in land development. Relatively high levels of productivity of labor and land have been achieved and have become an integral part of the Korean agriculture.

The most significant achievement is that farm household income has reached nearly the equivalent of urban wage earners(Table 27), indicating that the objective of reducing the income gap between farm households and non-farm households has been realized. As in many other countries, the gap in income levels has been an important policy issue. Accordingly, a number of policies have been implemented to increase rural farm income, mainly through high price-support policies in Korea. As can be seen in Table 27, per farm income in 1993 was about $ US 21, 091, a 14.5 percent incerase from the previous year, and equivalent to almost 95 percent of the urban wage.

Table 27. Comparison of Farm Income with Urban Income

	1980	1990	1993
	.....	$ US(1,000 Won)	.....
Farm Income(A)	4,378(2,693)	15,595(11,026)	21,091(16,928)
Urban Income(B)	4,567(2,809)	16,011(11,320)	22,167(17,734)
Ratio(A/B. %)	96	97	95

Source : MAI(1994). Computed on the basis of the annual average exchange rate for each year.

While the gap in nominal income between farm and urban households is rather small, this does not mean that farmers have become better off than the urban wage earners. Importance differences still exist between farm households and wage earning households, such as quality of living. In addition to the disparity between farm and non-farm incomes, there are also disparities in farm income between regions and crops.

Another important performance of Korean agricultural policy is the attainment of self-sufficiency in major products. Due to the successful implementation of agricultural policy, complete, of near, self-sufficiency has been achieved in rice , pork, chicken and milk. Overall, the rural standard of living has been raised compared with those of previous decades, although these success seem to be backed by the general public in favor of the agricultural sector.

Ⅲ. Impacts of the Uruguay Round Trade negotiations

The Uruguay Round, launched in September 1985 in Punta Del Este, Uruguay, had been by far the most complex and ambitious multilateral trade negotiations. After seven years of negotiations it was brought to a close on 15 December 1993. Formal agreement in GATT will ensure a new era of the global economy.

In agriculture, the UR negotiation is seen as part of a continuing process to cut farm subsidies and lower protection. Inclusion of the agricultural trade fully under the GATT rules and disciplines is a major achievement of the UR negotiations. In the past, agriculture has been largely excluded from the application of GATT rules. Trade tensions in agriculture had increased disputes, high farm subsidies and protected agricultural markets led to overproduction and dumping of agricultural surpluses, resulting in the inefficient use of resources.

Under the new agreement, fair trade rules will be extended to agriculture. The disruption and tensions in agricultural markets had been regarded as costly and threatening to the development of the world economy. Thus, the problems resulting from the agricultural sector will be brought to under comprehensive UR rules and disciplines. Inclusion of farm trade in the GATT discipline will reduce the danger of international conflict, reinforce agricultural reform, and give producers a better chance of exploiting their advantages. Under the GATT agreements, agriculture will be required to reduce its reliance on subsidies to domestic producers and to exporters. Non-tariff trade barriers have to be converted to tariffs.

Main contents of the agreement

The GATT agreement covers a comprehensive package of measures

which will be implemented over the period(6-10 years). The main provisions of the agricultural agreement contain specific bindings in four areas: market access, domestic support, export competition, and an agreement on sanitary and phytosanitary issues.

(i). Market access

Based on the Draft Final Act of December 1991, tariffication will be widely applied to the agricultural trade. All non-tariff measures are to be converted to tariffication(tariff equivalent), as stated in Article 4-2 " member shall not maintain, resort to, or revert to any measures of the kind which have been required to be converted into ordinary customs duties, except as otherwise provided for Article 5 and Annex 5 hereof" (GATT publication, 1993).

For developed countries, all the tariffs for agriculture are to be reduced on average by 36 percent with a minimum reduction of 15 percent for each tariff line over a six-year period from July 1995 to the year 2000. Developing countries are required to cut tariffs by two-thirds of the reduction(24 percet) applying to developed countries over a ten-year period from 1 of July to the year 2004.

Tariffication also requires the maintenance of import opportunities represented by minimum market access(MMA) and current market access(CMA) application, which will ensure the quantity of imports under current and minimum access basis. 3-5 percent of total domestic consumption must be maintained under the discipline, starting at 3 percent at the beginning period, rising to five percent by the end of the implementation period. The base period is 1986-88.

(ii). Domestic support

Each member should be required to reduce its domestic support in terms of current total aggregate measurement of support. For the developed countries, the agreement requires a reduction commitment of 20

percent of all domestic support prices over six years, relative to the base period(86-88) as measured in terms of current total aggregate measurement of supports. The green box policies, for example, general government services, research, pest and disease control, training services, etc., are exempted from the reduction commitments. For developing countries, a reduction commitment of 13.3 percent is required over ten years. Domestic support policies that do not exceed five percent of the total value of production, or, depending on the situation, a group of products, will not be subject to reduction commitments(de minimus provision). The de minimus provision for developing countries is set at ten percent.

(iii). Export competition

The Agreement lists the various export subsidy measures which are subject to reduction commitments. Export subsidies are subject to budgetary reduction commitment by 36 percent and quantity reduction commitment by 21 percent, by the conclusion of the implementation period. Members may use the base period 1991-92 as the starting point for reducing their export subsidies under some circumstances. However, volume and budgetary commitments to be reached by the end of the implementation period are based on the reference period of 1986-1990.

Developing countries are subject to budgetary and quantity reduction commitments, respectively of 25 and 15 percent(two-thirds of the reductions by the developed countries) over ten years. Each member undertakes not to provide export subsidies other than in conformity with the agreement and with its commitments as specified in its schedule.

(iv). Others

Other important agreements include special safequards(members may impose an additional duty on a temporary basis if the volume of imports exceed the trigger level or if the import price falls below a trigger price for the product cooncerned under some circumstances), due restraint(domestic support measures which are exempt from reduction commitments

required some conditions, namely non-actionable, and the establishment of A Committee on Agriculture which will review progress of the implementation.

There are also Agreements on sanitary and phytosanitary measures for the establishment of a multilateral framework of rules and principles to guide the adoption. The Final Act includes a Decision on measures concerning the possible negative effects of the reform program on least-developed and net food-importing developing countries.

1. Major agreements for Korea

Korea's position in the Uruguay Round, especially in the area of tariffication, had been negative because of fear of detrimental effects resulting from the opening of the rice market, a predominant crop in Korea. Korea had thus nervously been participating in the negotiations. However, at the final stage of the negotiation, Korea accepted the tariffication principle, because it no longer wanted to be isolated in the world economy. Korea agreed to allow access to its rice market from 1-4 percent of consumption over the next 10 years and will consider tariffication of rice imports thereafter. It also agreed to expand imports of beef and various other products. In compliance with the GATT agreements, Korea will reduce government support for agriculture.

Rice

Special arrangements have been made to accommodate the problem of rice in Korea. These specify that Korea is exempt from tariffication on rice for 10 years, provided it opens up its rice market to the equivalent of 1 percent of domestic consumption in 1995, and increases this figure to 4 percent by the year 2005(Table 28). Thus, the rice market will open on January 1, 1995 under the minimum market access. The size of the import market is set at one percent of domestic consumption at the begin-

ning of 1995, to be raised in steps to four percent at the end of the implementation year of 2004.

The 1995 potential volume of rice imports is estimated at 51,307 MT and 205,288 MT at the ending year of 2004. Between 1995 and 1999, rice imports will be increased by 0.25 percent yearly, and it will be increased by 0.5 percent between 2000 and 2004. Further imports of rice after 2005 and details about rice imports depend on future negotiations.

Table 28. Rice Imports by the GATT agreement

	Import quantity	Ratio of total consumption
	····· 1,000 MT ·····	····· Percent ·····
1995	51	1.00
1996	64	1.25
1997	77	1.50
1998	90	1.75
1999	103	2.0
2000	103	2.0
2001	128	2.5
2002	154	3.0
2003	180	3.5
2004	205	4.0

Source : MAFF(1993)

Barley

Barley will be liberalized from January 1, 1995, under the tariff equivalent which will be the price difference between domestic and imported prices, The tariff equivalent will be reduced by 10 percent. However, from the year 1995, barley will be imported, on the minimum market access, nd pot-ential barley imports are expected to be 3 percent of total

consumption(14,150 MT) in 1995 and 5 percent of total consumption(23, 582 MT) in 2004. Imports of beer barley will remain at the current level. Both the rate of tariffication and quantity of barley import have yet to be decided.

Beef

As was stated earlier, all BOP restrictions on beef shall be lifted no later than December 31, 2000. In the year 2001, beef shall be imported freely with no quota, no mark-up, and no LPMO involvement. The binding tariff rate at the year 2001 will be 41.2 percent and will be reduced to 40 percent by 2004. For the interim period, Korea will maintain its import restrictions on beef until the year 2000. The beef import quotas agreed in the UR negotiations are 99,000 MT in 1993, 123,000 MT in 1995, 167, 000 MT in 1997, and 225,000 MT in 2000(Table 29).

Table 29. Beef Imports by the GATT Agreement

Year	Quota amount(MT)	Duty(%)	Mark-up(%)	Percent SBS(%)
1993	99,000	20	100	15
1994	106,000	20	95	20
1995	123,000	43.6	70	30
1996	147,000	43.2	60	40
1997	167,000	42.8	40	50
1998	187,000	42.4	20	60
1999	206,000	42	10	70
2000	225,000	41.6	0	–
2001	–	41.2	0	–
2002	–	40.8	0	–
2003	–	40.4	0	–
2004	–	40	0	–

Source: The 1994 MAFF Materials.

Pork

Pork shall be liberalized by July 1 1997. However, the pork import quota will be maintained with the current binding tariff rate of 25 percent until June 30 1997. During the interim period(January 1995 through June 1997), Korea will provide access for imported frozen pork according to the following quotas: 21,930 MT in 1995, 29,240 MT in 1996, and 18,275 MT in 1997. From July 1, 1997 pork will be liberalized with the increased binding tariff rate of 33.4 percent, but the rate will also be reduced to 25 percent by the year 2004.

Chicken

Chicken shall be liberalized by July 1, 1997. Chicken import quotas, however, will be maintained until June 30, 1997, with the current binding rate of 20 percent. Access quotas for imported frozen chicken during the interim period(January 1995 through June 1997) are 7,700 MT in 1995, 10,400 MT in 1996, and 6,500 MT in 1997. From July 1, 1997 chicken will be liberalized with the increased binding tariff rate of 30.5 percent, which will be reduced to 20 percent by 2004.

Dairy products

Dairy products including processed cheese, other cheese, preparations for infant use, and other food preparations shall be liberalized from January 1, 1995. The tariff rate of dairy products will be 40 percent. However, whey powder will be liberalized from January 1 1995, with the increased tariff rate of 99 percent(ceiling binding) in 1995, from 20 percent of current rate. The tariff rate will be decreased to 49.5 percent by 2004. Whole milk powder and fat-removed powder will also be liberalized with a high tariff rate, which had already been noted by the GATT Secretariat.

Red-pepper, garlic, and onions

These products shall be liberalized between 1995 and 1997 with the current tariff rate of 50 percent plus some high tariff rate representing the price difference between domestic and world prices. The raised tariff rate, however, will remain under the ceiling binding.

Oranges

Korea shall liberalize fresh oranges on July 1, 1997. Between January 1, 1995 and June 30, 1997, the current import quotas will be maintained in the following amounts: 15,000 MT in 1996, 20,000 MT in 1996 and 25,000 MT in 1997. The in-quota tariff shall be bound at 50 percent, while the excess import over the base quota will face a high tariff rate of 99 percent in 1995. Orange juice shall be liberalized by July 1, 1997, with nothing but a bound 60 percent duty remaining. Import quotas during the interim period for orange juice are 50,000 MT in 1995, 55,000 MT in 1996, and 30,000 MT in 1997. Mandarin shall be liberalized by July 1, 1997. The current 50 percent of tariff rate for mandarin will be raised to 160 percent for the excess import mandarin in 1995.

Potatoes, sweet potatoes, soybean, and corn

These products shall be liberalized by January 1, 1995 with a levy equivalent to a tariff. The tariff equivalent will also be reduced by 10 percent by 2004. In the case of corn and soybeans, current market access will be applied, while potatoes and sweet potatoes will face minimum market access. Both the rate of tariffication and quantity for the minimum market access will be decided later.

Country schedule of liberalization

On February 15, 1994, the Korean government announced its liberalization schedule for the major agricultural products, followed by

the GATT agreement. The schedule outlines the affected agricultural products and their potential import quantity, tariff rates, and implementation period. The tariffs are to be progressively lowered and the quotas are to be expanded. The contents of the schedule shows no significant difference compared to the agreement reached in December 1993 in Geneva. Table 30 shows details of the schedule.

Table 30. Liberalization Schedule for Major Products

	Import quantity(MT)		Tariffs rates(%)		Implementation period
	Beginning	Ending	Beginning	Ending	
Rice	51,307	102,614	5	5	1995-1999
	102,614	205,228	5	5	2005-2004
Barley	14,150	23,582	20	20	1995-2004
Soybeans	1,032,152	1,032,152	5	5	1995-2004
Corns	6,102,100	6,102,100	3	1.8	1995-2004
Potatoes	11,286	18,810	30	30	1995-2004
Sweet potatoes	11,121	18,535	20	20	1995-2004
Beef	123,000	225,000	43.6	41.6	1995-2000
Pork, frozen	21,930	18,275	25	25	1995-1997.6
Chicken	7,700	6,500	20	20	1995-1997.6
Dairy products	621	1,034	20	20	1995-2004
Red-pepper	4,311	7,185	50	50	1995-2004
Garlic	8,680	14,467	50	50	1995-2004
Onions	12,369	20,645	50	50	1995-2004
Oranges	15,000	57,017	50	50	1995-2004
Sesame	6,731	6,731	40	40	1995-2004

Source : The Chosun Ilbo(Daily News). February 15, 1994

2. Impacts on the Korean agricultural sector

It may be too early to quantify the effects of the UR agreement at this stage, but it does appear that the adjustment will be considerable, especially for countries highly dependent on agricultural imports, whereas for the agricultural exporting countries, the agreement implies liberalization of world agricultural trade, and improving economic welfare through accelerating efficient resource allocation in the agricultural sector.

The government's unpopular decision to open its rice market has provoked daily street demonstrations. The impact of the UR agreement on the production and income of the Korean farmers over the next several years may be great. The acceptance of the UR negotiation, which means the opening of the rice market, was criticized by farmers, farmers' organizations, students and opposition parties.

The Korean president, Kim, himself apologized to the people for breaking his presidential campaign promise to protect rice farmers from imports and said that he had to accept rice imports to ensure Korea's position in the current UR trade negotiations under GATT.

Criticism of the government's acceptance of rice import had resulted in a reshuffle of Cabinet members, including the Minister for Agriculture, to calm public anger. Demonstrations against the UR and anti-ratification protests continue in Seoul, the capital of Korea, and other parts of the country. Many people blame the government for handling the rice issues poorly and having done little to prepare the public for the decision. The government is now drawing up new agricultural programs to compensate farmers for losses they could suffer as a result of the UR trade agreement.

Farm economy will deteriorate

In general, the impacts of the Uruguay Round and accordingly the process of liberalization are expected to have an impact on all Korean farmers, leading inevitably to widespread deterioration in farm incomes. A recently published KREI paper(Impacts of the UR, KREI. 1994) showed that total farm income losses, as a result of the UR agreements, were estimated to reach about $US 10 billion(7.8 trillion Won) between 1995 and 2001. Agricultural production as a percentage of GNP will reduce to 2.8 percent in 2001, from 7.8 percent in 1992. The labor force employed in agriculture will also decline from 16 percent in 1992 to 7.9 percent in 2001(Table 31).

By the end of 2001, the number of farmers is expected to drop to 2.4 million(5.1 pecent of total population), down from 5.7 million(13.1 percent of total population) in 1992. The agricultural trade deficit will rise from $US 4.26 billion in 1992 to $US 13.03 billion in 2001. Growth rate in the agricultural sector is expected to show a decline of -1.1 percent point at the beginning of 1995, and is estimated to increase slightly, about 0.1 percent between 1995 and 2001.

Table 31. Impacts of the UR on the Korean Agricultural Sector

	1992	1995	2001
Agricultural contribution to GNP(%)	7.8	5.5	2.8
Labors employed in agriculture(million)	3.0	2.7	1.9
Agricultural population to total(%)	16.0	13.1	7.9
Farm numbers(million)	5.7	4.8	2.4
Farm numbers to total households(%)	13.1.	10.7	5.1
Agricultural trade deficit($US billion)	4.3	6.4	13.0
Growth rate in agriculture(%)	1.5	-1.1	0.1

Source : Impacts of the UR. January 1994. KREI

Agricultural prices are expected to fall

The same study also predicted that prices of almost all agricultural products would fall from the beginning of 1995. A sharp decline was forecast for beef, pork and oranges. For the products which have relatively high price difference between domestic and imported levels, the price fall would be higher.

Self-sufficiency for major products are to decline

The self-sufficiency ratios for 10 major commodities, which currently average between 83 and 104 percent, will decrease sharply to 41-99 percent in the year 2001. The fall in self-sufficiency will be higher in the beef and orange sectors where they face competition from foreign products, while other commodities including chicken, vegetables and fruit will show relatively small decreases.

Producer's surplus is forecast to fall

The central impact of the GATT agreement will be the loss of producers' surplus. The producers' surplus is forecast to fall as a result of agricultural liberalization. According to the KREI report, total producers' loss is estimated to reach about $US 10 billion for the 10 major commodities between 1995 and 2001, unless current production costs are reduced. For the case of rice, total producers' loss is estimated at $US 786 million (619.4 billion Won). For beef, the loss in producers' surplus is estimated at $US 2.7 billion(2.1 trillion Won), while it is $US 2.3 billion(1.8 trillion Won) for the pork. To an important extent, the impact of the Uruguay Round seems to be negative and a substantial burden for the Korean agriculture. However, in the long run, the Uruguay Round agreement is likely to be the impetus for much-needed market oriented reform of Korean agricultural policy. The changes required by the Agreement will reduce the resource misallocation associated with Korea's high support and protection policies. It will be a signficant benefit for the economy as a whole.

Summary and Conclusions

The Korean economy has developed remarkably over the past three decades, with a real GNP in 1995 is estimated to reach about $US 8, 000.The driving force behind this marked economic growth has been export-oriented industrialization, starting in the early 1960s. During this economic development period, the Korean economy experienced rapid structural transformations. The share of GNP generated by the manufacturing sector has increased sharply, while agriculture's contribution to the GNP continued to decline. Agriculture was given a low priority during the period of economic development, because government policy emphasized the industrial sector. In recent years, the Korean economy showed some sluggish trends, but the outlook for 1995 and onwards is bright with recent reforms in Korean economic policy expected to revitalize growth.

Korea's agricultural sector is characterized by small family-operated farms with an average farm size of 1.3 hectares in 1995. Farm numbers in 1994 were approximately 1.6 million, accountiong for about 15 percent of all Korean households. Farm population in the same year stood at 5.2 million, or 11.6 percent of total population. Arable farm land has been relatively small, reaching 2.0 million hectares in 1994. Rice is the dominant crop, accounting for about 30 percent of agricultural output value. The dominance of rice is a reflection of the dominance of rice in food consumption, where it accounts for 40 percent of total calorie intake, and the dominance of land cultivated to rice, approximately accounting for 50 percent of total land. On the other hand, rising incomes have created increasing demand for livestock products, vegetables and fruit.

Until twenty years ago about 50 percent of the GNP was contributed

by the agricultural sector and more than half of the labor force was still employed in agriculture. Since then, the share of agriculture has fallen rapidly. After remaining stationary between 1960 and 1980, the number of workers employed in agriculture fell in the 1980s. This decline in population and contraction in the output value are expected to continue in the future.

However, agriculture in Korea still plays an important role, accounting for a relatively large share of total output(7%) and employment(12 %). It provides food supplies, maintains rural vitality, and preserves environmental benefits. Most people think that agriculture in Korea is still the backbone of the Korean culture and tradition and is perceived to be important for security and prosperity of the nation, although the relative importance of agriculture has been declining.

Korean agriculture does not have sufficient resources for its food production. However, over the last four decades, the sector has developed dramatically with respect to output, resource allocation, and types of production. With limited land resources and a rapidly declining and aging farm labor force, Korea has increased its agricultural production, especially for rice. The growth in output has largely been achieved through increases in yields, as a result of the introduction of high-yield varieties of rice in the 1970s, and improved quality of farm land through irrigation, drainage, and machinery.

Rapid growth of the livestock sector is another characteristic of the past decades, as a result of increased incomes. Output of beef, pork, and chicken has increased significantly, but not sufficient enough to meet domestic demand. Thus Korea has imported a large quantity of livestock products as well as feed ingredients. Beef imports in 1994 amounted to about 120,000 MT and are expected to grow in the future. For much of the 1980s, Korea banned imports of most livestock products. However,

the government has progressively reduced import restrictions in response to growing concerns about domestic price stability and increased demand, and partly under pressure from major trading partners.

Despite substantial increase in production, the overall food supply in Korea is not sufficient to meet increasing demand, coupled with the changes in the consumption patterns and increased income levels. Korea has therefore steadily increased its agricultural imports over the past decades. The trade effects of Korea's agricultural policies are of great concern to its trading partners. Korea's agricultural trade has increased remarkably, with total agricultural imports rising to around $US 8.0 billion in 1994. Since the late 1970s, Korea has imported a variety of agricultural products, and in 1994 they accounted for around 10 percent of total imports.

The composition of its major imports has been very stable. Over the past two decades, corn, wheat, soybeans, and beef have been the major products in terms of value. The US, Australia, New Zealand, Canada, and the EU have become major exporters to Korea, while Japan and the US have been the dominant destinations of Korea's exports. China in recent years has replaced the US as a source of various agricultural products, particularly in feed grain imports. On the agricultural export front, Korea has not shown strong growth, remaining stable at around $US 3 billion over the past five years.

Liberalization is proceeding in the Korean agricultural sector. A number of recently announced agricultural initiatives, including the "New Agricultural Plan" and "Agriculture and Fisheries Development Plan", especially involving the reform of rice and beef policies, and trade opportunities, suggest that Korea is moving to reduce its level of protection. The most striking policy change is in the Korean rice market. This strictly controlled market will be partially opened in the year 1995 as a result

of the recent GATT agreement. The government accepted the tariffication principle, with a 10-year delay in implementation. Thus opening of the rice market begins on January 1, 1995 under the minimum market access provisions. Korea's rice purchase system has been under intensive scrutiny in recent years. Though Korean farmers would like more time, the government is committed to market liberalization for most products by 1997. This will force many rapid adjustments.

The trend towards liberalization is clear in agricultural trade, including an annually-based liberalization plan, recommended by the GATT, involving reducing tariff rates and relaxing regulations, though the pace is gradual. Under the trade liberalization plan, import restrictions have been relaxed widely and significant tariff reductions have already been implemented.

A further liberalization schedule will be announced, together with further developments in market orientation, including a reduction in tariffs and a relaxation of regulations. New products are being allowed entry into the Korean market each year. Relaxation of restrictive and regulative protections are expected to encourage imports. It is likely that this situation will change more rapidly from 1995 onwards and the liberalization of agricultural imports will accelerate.

The Korean government has implemented a variety of policies to achieve its agricultural goals. Extensive intervention has been undertaken under past agricultural policy, including price support, import restrictions and other measures in pursuit Korea's agricultural policy objectives. Because of the importance of the grain policy, policies relating to rice, the major crop, have been central to farm policy. A dual price system for rice and barley has been in place and the price difference has been financed by the government. During 1970-1991, the government's annual purchase of rice averaged around 20-30 percent of total rice pro-

duction, resulting in a large government deficit in the Grain Management Account. Continuation of the policies based heavily on rice price support to achieve self-sufficiency would almost certainly lead to continuing surpluses, a heavy government cost burden, and misuse of resources in the economy. The expanding government deficit has emerged as one of the serious constraints on farm policy.

Despite the substantial development of the Korean agricultural sector including increases in production and improvements in farm income, it still suffers from a number of chronic structural weaknesses and is confronted with a number of problems. Nearly half a million rural farmers have left farms annually for the cities. Farms are characteristically small and fragmented. The farm productivity is low, as is well reflected by the extremely small size of farms. The average farm size is slightly over 1.3 hectares. Most rely upon family labor. The importance of the agricultural sector to the general economy is declining, indicated by the low priority in the national economic policy. Farm income and agricultural prices are unstable. Agricultural policy is highly dependent on government support.

These problems have driven many young farmers to leave rural areas in search of better paying jobs elsewhere. In many ways these transitional problems that the Korean agriculture is undergoing resembles those of other developed countries during the 1960s and 1970s. The situation has been deteriorating in recent years: the agricultural sector contributed only about 7 percent to the gross domestic product and employed 12 percent of the total labor force in 1994 and the ratio is forecast to decrease further in 1995. The food self-sufficiency ratio dropped to 34.3 percent in 1992, from 37.5 percent in 1991.

Since the late 1980s and early 1990s, policy-makers have increasingly recognized the importance of structural adjustment in the agricultural sector, and have developed an efficiency-oriented plans. Pressure

for changes to the agricultural policies, particularly to rice policy, has been strong in the 1990s.

Many people in both public and private sectors have raised concerns about the effectiveness of the rice policy and they recommended its general and widespread reform along market-oriented principles. An increasing domestic demand for a set of market-oriented policies are important factors for implementing changes in agriculture.

Moreover, the absolute level of rice consumption is falling both on a per capita basis and in total. Rice production has been on a falling trend and all the increase in farm output has come from higher value crops such as vegetables or crops that require even less labor input such as fruit. The raising of livestock has been increasing, following the increased demand for meat.

International pressure, particularly from Korea's major trading partners including the US, Australia, and the EC, was an important element in making the 1990s a period of change for Korean agricultural policies. Korea's growing prominence in international trade has brought foreign pressure for liberalization of its agricultural market. Therefore, beginning with the New Agricultural Plan and the Agriculture and Fisheries Development Plan, Korea has made considerable progress in opening up its borders and reducing restrictions on imports.

Impacts of the Uruguay Roud trade negotiations, in which Korea has been participating somewhat nervously, will be extensive and perhaps greater than expected. Korean agriculture is not competitive internationally in most products and greater liberalization of the agricultural markets is likely to trigger further significant adjustment. These pressures are pervasive and coupled with the agreements of the Uruguay Round trade negotiations.

In 1991, faced with these emerging issuses, the government announced a 10-year agricultural reform program, the "Agricultural Structure Adjustment Plan," with a budget of 42 trillion Won($US 55 billion). The first objective of this plan was structural adjustment in the agricultural sector and it focused on competitiveness and efficiency rather than supporting farm income. Several changes were introduced. Many regulations on land and several restrictive trade measures were to be relaxed under the plan, although there have been only minor effects to date.

This was followed by a "New Agricultural Plan" announced in June 1993, and "Agriculture and Fisheries Development Plan" in June 1994, initiated by the new government. Faced with a steadily growing import liberalization program and an impending UR agreement, the government has proposed radical ideas as part of this new five year plan. The government also has recognized that continuously increasing farm prices to maintain agricultural income parity was not an appropriate policy in the long run. In part, the reform was motivated by the desire to use the budget more efficiently.

With agricultural policy facing dramatic changes in the 1990, especially because of the launch of the WTO scheme, economic efficiency has to be given greater emphasis. The main contents of the "New Agricultural Plan" and the "Agriculture and Fisheries Development Plan" include reducing the quantity of government-purchased rice, narrowing the gap between the sale and purchase prices, and rationalizing handling costs. Notable among these are programs that would reduce purchase quantities and prices and encourage land use. In fact, most Koreans worry that further increases in the rice purchase price would be unfair for urban dwellers.

It is clear that high food prices hurt the majority of Korean food con-

sumers. Moreover, the cost of Korea's agricultural policies in overall economic welfare terms is high. However, there still remains much resistance to reform. Koreans still have their roots in farming, and have realtives on farms or in rural areas. An ancient Korean saying that "agriculture is the foundation of the nation", or "farming is a divine calling", is still a prevalent view among the Korean people. They do not want either domestic or international forces to dominate Korean agriculture. For the farmers, who have traditionally been accustomed to strong government protection, the challenge of opening the agricultural market still seems formidable. They fear heavy income losses and undesirable social consequences in rural areas. An important factor that must also be taken into consideration is that Korean farmers still have strong political power, and will exert pressure for continued high protection and support for agriculture.

The other issue which complicates adjustment in the Korean agricultural sector is the fact that nearly 50 percent of farm incomes still rely on one particular crop, rice. The strong political power of the farmers and close urban-rural family ties have impeded more complete structural adjustment. The political influence of 1.6 million farm households(5.2 million farm population in 1994) substantially exceeds the economic significance of the sector.

It is nevertheless a significant step in the right direction. While agriculture in Korea has already begun a structural transformation, it still faces strong competition from more efficient domestic non-agricultural sectors for policy improvenment. The agricultural sector in Korea has been immune to change in the past as a result of its special place in the Korean society. It is evident that reform is now underway and Korean agriculture is moving towards a more market oriented economy, although the pace is gradual. Assistance to farmers has increased remarkably as is reflected by the high PSEs and CSEs, and the growth of the total agricul-

tural budget from 5.3 percent in 1975 to almost 10 percent in 1994. On the other hand, nominal farm income level in 1993 reached around 95 percent of urban dwellers'income, and accordingly improved farmers' standards of living.

The overall impacts of the Uruguay Round agreement on the Korean agriculture are expected to have detrimental effects on most Korean farmers. According to the KREI(Korea Rural Economic Institute) study, total farm income losses, as a result of the Uruguay Round agreements, have been estimated to reach about $US 10 billion(7.8 trillion Won) between 1995 and 2001.

However, for the economy as a whole, the impacts of the Uruguay Round and the changes required by the Agreement will reduce the resource misallocation in the long run, and will be the impetus for reform of Korean agricultural policy.

The Korean government has made efforts to develop the agricultural economy. However, with limited resource the emphasis had been placed on expanding agricultural production and increasing farm income rather than increasing efficiency. Policies continued to be focused on increasing support under increasingly difficult budget constraints. Policies are still driven to a large extent by a desire to support rural income rather than to develop economically rational agricultural operations. This, sometimes, leads to a number of policies that would be confused, piecemeal, and often contradictiory. In addition, while market protection serves to increase rural incomes in Korea, it also raises producer costs and reduces competitiveness. These measures have in some ways hindered efficient agricultural development, but it would be a mistake to think the situation is impossible.

However, to achieve a general community consensus, the government has changed the balance in its agricultural programs, making them more

market and efficiency-oriented. Agricultural policies in Korea should increasingly be designed to contribute to the expansion of efficiency, and to assist in the improvement of agricultural productivity and marketing infrastructure. In addition, special attention to maintain stability and predictability in policy will be required. Whatever change are adopted will require a transition period. Ideally, farmers want a smooth, gradual approach to the structural adjustment in the agricultural sector.

Korean agriculture stands at a critical juncture in 1995. Faced with problems both domestic and from abroad, Korea must make important decisions regarding the future development of its agriculture, its positions in the international trade negotiations, and the distribution of agricultural resources. Koreans are conscious, however, that they cannot live isolated from other countries, and are prepared to make some further effort. Extensive market-opening measures have already been adopted, reflecting Korea's increasing importance in the international community. The Korean government has called for a longer time frame to adjust to a market economy. The period from 1995 onwards will be another difficult one for agriculture in Korea, although less severe than prior to 1995.

Nevertheless, changes in agricultural policy must be made if Korea is to be able to survive more open agricultural markets. Changes in the agricultural policies in Korea require complex processes and, costs and tradeoffs will be involved. But these changes are needed if Korea is to be able to adjust in a rapidly changing world economy. Changes will also create new opportunities for Korea to adjust its agricultural policies. This does not mean that a decision to change agricultural policies is taken lightly, and it does not exclude the possibility of Korea taking its own steps toward development which it considers to be most appropriate for Korean agriculture.

Once change is made, the actual impacts and economic pain are likely to be less than expected. It may be that the coming years will be viewed as the period of internationalization and globalization, benefitting Korean consumers and producers, as well as other countries.

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