ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

National Policies
and Agricultural Trade

Review of Agricultural Policies in Korea

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KOREA

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FOREWORD

This study of Korea's agricultural policy was undertaken as part of the OECD's continuing work on Member countries' policies and agricultural trade and is the latest in a series that has, since 1987, covered all OECD Member countries. It describes and evaluates the development and the impact of policies, particularly on agricultural trade, against the principles for agricultural policy reform laid down by OECD Ministers in 1987, and reiterated and developed further in 1992 and 1998.

The study gives detailed explanations of the methods applied to calculate the Producer and Consumer Subsidy Equivalents (PSE and CSE) and the other indicators used to measure the support provided to agriculture. The quantitative analysis covers the period 1979-97. The analysis of agricultural policy developments in Korea, in 1998, and the result of PSE/CSE calculations for 1998 will be presented in *Agricultural Policies in OECD Countries: Monitoring and Evaluation, 1999*.

The author of the study is Catherine Moreddu. Carmel Cahill and Kyung-Tae Oh also contributed. The author received helpful comments from colleagues in the Directorate for Food, Agriculture and Fisheries, in particular Carmel Cahill and Luis Portugal. Statistical assistance was provided by Stéphane Guillot.

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TABLE OF CONTENTS

Boxes

Tables

Graphs

Chapter III

ANALYSIS OF SUPPORT TO AGRICULTURE, 1979-97

Graphs

Annex I. BACKGROUND TABLES

Annex II. REGULATORY REFORMS AFFECTING AGRICULTURE, 1993-1997

Annex III. ASSISTANCE TO KOREAN AGRICULTURE, 1979-97

Graph

Tables

Notes to Tables

LIST OF ACRONYMS

AFMC	Agriculture and Fisheries Marketing Corporation
AMS	Aggregate Measurement of Support
BOP	Balance Of Payments
BSE	Bovine Spongiform Encephalopathy
CIF	Cost, Insurance, Freight
CPI	Consumer Price Index
FIA	Farmland Improvement Association
FOB	Free on board
GA	General Account
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GNP	Gross National Product
HA	Hectare
KG	Kilogram
KREI	Korea Rural Economics Institute
KFRI	Korea Food Research Institute
LIDF	Livestock Industry Development Fund
LPMO	Livestock Products Marketing Organisation
MAF	Ministry of Agriculture and Forestry
MAFF	Ministry of Agriculture, Forestry and Fisheries
NACF	National Agricultural Co-operatives Federation
NLCF	National Livestock Co-operatives Federation
RDA	Rural Development Administration
RDC	Rural Development Corporation
ROU	Rules of Understanding
RPC	Rice Processing Centre
SBS	Simultaneous Buy/Sell
WTO	World Trade Organisation

SUMMARY AND CONCLUSIONS

Overview

This study has traced the evolution of Korean agricultural policies since 1979 and the levels of support that have resulted. During most of the review period 1979-97 intervention and support increased as government pursued a vigorous policy of productivity improvement with the principal objective of providing sufficient domestically produced rice behind high border protection. From the mid 1980s however the policy environment began to change as Korea came under pressure from a number of its trading partners to open up its markets, including those for agricultural products, and the general economic policy stance became less directive. From an agricultural point of view, this has resulted in a rapid increase in the value and volume of agricultural imports and a change in emphasis in domestic policy towards improving efficiency and competitiveness at all levels of the agro-food sector. There has been a significant effort to deregulate, the policy perspective has been widened to encompass more general rural development objectives and policies, and more recently, the preservation of the environment has emerged as an additional element shaping policy. Finally, the economic and financial crisis that occurred towards the end of 1997 has had immediate and significant effects on the agricultural sector and on agricultural policy implementation. Steep rises in import prices have reinforced the Korean view of the necessity to maintain a high degree of self-sufficiency in rice, the staple foodgrain. Meanwhile, heavy government expenditures for structure and infrastructure improvements in rural areas, resulting from the new policy direction embarked on in recent years, may have to be postponed. And the sudden change from full employment and labour shortage in the economy in general to a significant level of unemployment has changed the context in which structural adjustment at farm level might be expected to occur. These changes will, it is expected, be relatively short-lived but will nonetheless be important factors affecting agricultural policies in the foreseeable future.

This Section first summarises the most important economic and agricultural developments in Korea. It then gives a brief overview of the objectives of Korean agricultural policy and the main policy instruments used in pursuit of them, and the resulting level and composition of support as measured by the Producer Subsidy Equivalent, the Consumer Subsidy Equivalent and related indicators. Finally, agricultural policy is assessed against the principles for agricultural policy reform laid down by OECD Ministers in 1987, and reiterated and developed further in 1992 and 1998.

Economic and agricultural developments

The Korean economy, which was poor and mainly agrarian at the beginning of the 1960s, grew very rapidly up to 1997, at a sustained annual growth rate of close to 9 per cent on average. The last 20 years were characterised by high levels of investment and savings and a strong export performance. Employment growth was high during this period and unemployment rates fell to around 2 per cent in the 90s, reflecting a *de facto* labour shortage that was particularly keenly felt in agriculture. As a result, wages and salaries increased strongly in the early to mid-1990s. By the early 1980s inflationary tendencies in the economy had been brought under control and since then, the rate of inflation has remained below 10 per cent, peaking in the early 1990s. The won/US$ exchange rate did not fluctuate widely during the review period but the won lost half of its value against the dollar at the end of 1997 as a result of the financial crisis that hit Asian countries.

The rapid development of the Korean economy has been reflected in the declining role of the agricultural sector. From 27 per cent of Gross Domestic Product (GDP) and 50 per cent of the labour force in 1970, agriculture's share fell to 5 and 11 per cent, respectively, in 1997. Emigration out of rural areas has had the positive impact of freeing labour for industrial development and was an essential prerequisite to the economic development witnessed during the last three decades. But, until the 1990s, development efforts were heavily concentrated in the emerging urban areas with the result that rural areas now lag significantly behind in terms of economic and social infrastructure and services.

Although food represents a decreasing proportion of total household expenditures, it is high relative to other OECD countries at 29 per cent in 1997. This suggests that agricultural and trade policies that influence food prices have wide repercussions for the economy and welfare in general. But the pattern of food consumption has been changing rapidly. Reflecting the high income elasticity of demand for such products, consumption of meat, fruits and vegetables and other horticultural products has been increasing, while food grain demand, especially that of rice, has been falling. Korea's meat production industries are almost entirely dependant on imported feed grains. Consequently, Korea is a major importer of agricultural products. By 1996 Korean self-sufficiency in basic foodstuffs was only 27 per cent. Korean food exports are very small. The share of agriculture in total government expenditures is high at about 11 per cent in 1997.

Rice still dominates agricultural production but livestock products, fruits and vegetable are becoming increasingly important. Because land and labour are scarce, Korean agriculture makes intensive use of farm machinery and purchased inputs, such as fertilisers and pesticides. In doing so, it has achieved high yields and allowed Korea to be self-sufficient in a number of commodities, including rice, but not without damage to the environment.

Although there has been a dramatic decline in the agricultural labour force, Korean agriculture is still characterised by very small owner-operated farms (1.3 hectares on average in 1997), and the spread of farm size around the average is relatively narrow. Demographic factors and economic development favoured structural adjustment but land regulation was a major factor preventing farm size from increasing significantly. Up to 1996 when land regulations were revised, farms could not exceed 3 hectares. However, many of those leaving rural areas for employment in the cities retained ownership of the land which continues to be farmed by remaining family members or by farming companies or co-operatives in informal arrangements that mean that the *de facto* farm size may be greater than suggested by the official statistics. Moreover, as in many OECD countries, adjustment is beginning to lead to a bipolarisation of agricultural structures, with large commercial farms (by Korean standards) developing at one end of the scale and smaller part-time farms developing at the other end, to the detriment of middle size farms.

On average, farm households have diversified their income sources and now depend on agriculture for less than half of total income. This reduces the dependency of farm households on agricultural support. As a result of high levels of support and income diversification, farm households have achieved income levels close to those of urban households, although the gap has widened since the beginning of the 1990s.

The Korean agro-food sector is not fully developed. Upstream industries have been characterised by limited competition, co-operatives play an important role in the provision of inputs to farmers and there has been, in general, a significant degree of government intervention. Recent years have however seen the beginnings of a move to deregulate in these sectors. Among downstream industries, food processing companies are more competitive, especially those in urban areas and foreign direct investment is now fully liberalised. However, most companies in rural areas have financial problems and there will probably be some horizontal restructuring in the near future.

Marketing and distribution are also considered to be relatively underdeveloped but the government has already taken measures to improve efficiency in those sectors through regulatory measures, including deregulation, and infrastructure investments, mainly taking the form of reduced interest loans. Regulatory measures concern mainly the marketing of government purchased rice, which is now sold to wholesale markets through auctions without any government involvement, and the grading and inspection systems.

Co-operatives play an important role in the handling and processing of domestically produced commodities. Around 30 per cent of the total volume of agricultural production is channelled through the National Agricultural Co-operatives Federation. Co-operatives also play an important role in implementing policy measures on behalf of the government, especially those regarding input distribution and price stabilisation.

The recent economic crisis affecting a number of countries in Southeast Asia has led to a contraction of the Korean economy in 1998, to a rise in unemployment as a result of restructuring in the financial and industrial sectors and to a reduction in total wages. On the other hand, the devaluation of the won should result in a large surplus in the current account balance as imports decline and competitiveness gains boost exports. Measures taken to overcome the crisis include reductions in government spending. For 1998, agricultural expenditures are to be reduced by 8.4 per cent compared to the amounts originally budgeted and by 2.2 per cent compared to 1997. These reductions are of roughly the same magnitude as those occurring throughout the economy. It is unlikely that budget constraints will be eased in the near future. As a result, long term projects to improve structural adjustment in agriculture will be delayed and there may be a shortage of capital in the agricultural sector.

Rising unemployment and uncertainty about the economic future have caused consumption of food products with the highest income elasticity of demand to decrease, resulting in lower prices. But overall, food prices rose faster than the general rate of inflation during the year 1998. The exchange rate crisis also had the immediate effect of raising the price of imported agricultural inputs such as fuel, fertilisers, pesticides and feed grains. This has impacted the agricultural industries most dependant on imported inputs, in particular horticulture and livestock. As imports, whether of food products themselves or of essential inputs have become more expensive, food security concerns have been reinforced for both Korean consumers and government. Though volumes are still very small, exports of agricultural products have been boosted by the devaluation of the won.

Other effects of the economic and financial crisis on the agricultural sector are already emerging. There has been a slowing in migration from rural to urban areas, therefore affecting structural adjustment in the agriculture sector. Moreover, since December 1997 a movement from urban to rural areas has been observed. As there are only minimal social safety-net provisions in Korea, newly unemployed urban workers have moved back to rural areas. While special funds to assist people returning to the countryside and agriculture have existed for some time, they are not currently able to fully meet all demands for assistance and the government is trying to organise additional services, including extension.

Objectives of agricultural policy

Food security has always been a strong concern of the Korean people and authorities, and the self-sufficiency objective in rice is still prominent. This can be explained by the particular significance of agriculture, especially rice cultivation, in the Korean economy and culture, reflecting centuries of dependence on it as the staple food. The attachment to an agricultural ethos in Korean society is reinforced by the fact that much of Korea's heavily urbanised population was born in the countryside or are the first generation descendants of those who were. In addition, paddy fields play an important role in preventing flooding and land erosion during the rainy season through storing water. They require continuous maintenance and, once destroyed, are difficult and expensive to restore.

Korea places a special emphasis on the need to have a stable and reliable capacity for rice production in emergency situations. This strongly held belief in the importance of self-sufficiency in the staple food as a guarantee of food security reflects memories of war and food shortages. More recently, this belief has been reinforced by the devaluation of the won and the sharp rise in imported food costs.

Korea is also concerned about food supply in the event of reunification with the North. North Korea is less well endowed than the Republic of Korea as far as agricultural resources are concerned and it has not been as successful in applying modern technology and methods to increase technical productivity. The North has suffered food shortages in recent years as inefficient production was aggravated by recent natural disasters and has appealed for food aid to alleviate famine.

In addition to food security, the basic objectives of Korean agricultural policies set in the 1960s were to raise productivity and income in agriculture, and to enable farmers to enjoy the same standard of living as workers in other industries. These objectives were broadened in the 1990s to encompass rural development and environmental concerns, and more emphasis has been put on the need to increase efficiency through restructuring the agro-food sector and improving its regulatory environment.

Following the election of a new government at the end of 1997, the following priorities were set for agriculture policy as a) the development of a sustainable agriculture; b) the maintenance of self-sufficiency in rice; and c) the development of marketing of agro-food products and improved food quality and food safety. Those priorités were reflected in the new Agricultural and Rural Basic Law which will be put in effect in January 2000. In addition, the government is committed to respect fully all international obligations. Restructuring of the agricultural sector will continue to be pursued. The government also wishes to encourage farmers' groups to participate in policy making and to foster self-reliance, including through improving their economic and technical management skills and encouraging multifunctionality.

Agricultural policy measures

Overview

Support to Korean agriculture relies predominantly on border protection, associated in some cases with price stabilisation measures, in particular for rice. There are various types of direct payments but they are of limited importance. Access to cheap, modern and labour saving inputs and technology has always been a strong preoccupation of the Korean government. Programmes to improve land, through irrigation, and to consolidate farms are in place. Downstream industries are supported through structural investments and their operating costs are sometimes subsidised. In addition, they are compensated for the losses incurred in carrying out price stabilisation purchases for the government.

Level of support

Support to agriculture from agricultural policies in Korea, as measured by the Producer Subsidy Equivalent (PSE), has increased strongly over the review period 1979-97. From 56 per cent in 1979, the percentage PSE grew to a record 82 per cent in 1995, followed by a fall to 75 per cent in 1997. Korea now belongs to the group of OECD countries with the highest level of support, with the percentage PSE in recent years at double the OECD average. The PSE for rice accounts for a high share of the total PSE – between two-third and three-quarters – during the review period 1979-97 both because of the importance of rice in the total value of agricultural production and because of its high level of support. When rice is excluded, the percentage PSE falls to 52 per cent from 75 per cent in 1997 and the absolute value of the total PSE falls by two-thirds.*

The percentage Consumer Subsidy Equivalent (CSE) reflects movements in the percentage PSE but is lower, mainly because of large imports of some crops, notably feedgrains, which enter the country with little protection. From 50 per cent in 1979, the percentage CSE rose to 65 at the beginning of the 1990s and fell to 53 in 1997. The gap between the two indicators has widened at the end of the period as lightly protected imports increased and the share of market price support in the PSE fell. This is confirmed by the level of the consumer Nominal Assistance Coefficient (NAC), which is an indicator of the wedge between domestic and world prices measured at the farm level. From 2 on average in 1979-81, the consumer NAC increased to 2.9 in 1990 and then fell to 2.2 in 1997. The consumer NAC for rice is by far the highest of all commodities, having exceeded 5 since the mid-1980s and reaching a record of 9 in 1993. When rice is excluded, the consumer NAC for all other PSE commodities varies between 1.5 and 1.9 during the period 1979-97 and is 1.5 in 1997.

* While interpreting these numbers, one should keep in mind that PSEs are calculated for products covering only 60 per cent of the total value of agricultural production, on average, during the period 1979-97.

Total transfers from consumers and taxpayers to agriculture associated with agricultural policies totalled about 23 trillion won (US$24 billion) in 1997. Reflecting economic growth, they have fallen steeply from 15 per cent of GDP in 1979 to 5 per cent in 1997 although they are still high compared to the OECD average of 1.3 per cent. As a share of agricultural GDP, total transfers have increased. At US$518, total transfers per capita were almost twice as large as the OECD average in 1997. Among OECD countries, only Norway and Switzerland have higher levels of transfers per capita while levels are similar for Iceland and Japan.

Policy measures

Market price support measures accounted for around 95 per cent of all support at the beginning of the period. This proportion fell to 85 per cent in 1997, which is high compared to an OECD average of 62 per cent. Market price support is maintained through high border protection, especially for rice, and domestic price stabilisation mechanisms, including government purchases and public stockholding. To regulate domestic producer prices, there are publicly funded purchases for most commodities, operated directly by the government in the case of rice and barley, and by co-operatives in other cases. The frequency of purchase operations varies depending on the commodity. An administered purchase price is set for rice, barley, maize and soybeans. When the share of government purchase in domestic production is significant, this price strongly determines producer prices. This is the case for rice, barley and maize but not for soybeans because the purchase price is not sufficiently attractive to encourage farmers to sell their production through this channel.

At the beginning of the period, imports of most domestically produced commodities were only allowed in case of domestic shortages. From the second half of the 1980s, Korea embarked on a process of agricultural trade liberalisation that involved a phased elimination of many quantitative restrictions and reductions in tariff rates. This process was accelerated by the conclusion of the Uruguay Round Agreement on Agriculture which resulted in the tariffication of all tariff lines except those for rice. In fact, by 2001 when quantitative restrictions on beef are to be eliminated, rice will be the only product still subject to any kind of quantitative measure. In the case of rice, Korea took advantage of "special treatment" as a developing country, whereby it accepted a minimum access commitment of 1 to 4 per cent of domestic consumption, but did not tariffy. With respect to the other market access provisions, tariff quotas had in general been filled up to 1997 and in many cases, Korea continues to apply tariffs that are lower than bound rates. However, as a result of the crisis, the rate of fill of tariff rate quotas is less than 80 per cent on average in 1998. For some products, including rice and beef, import quotas are still administered by State-trading agencies.

Because Korea is treated as a developing country in the Uruguay Round negotiations, its requirements to increase market access and reduce the Aggregate Measurement of Support (AMS) and export subsidies are lower than for developed countries and are to be implemented over a longer period. Nonetheless, Uruguay Round commitments are exerting a significant influence on agricultural policy formation, in particular with respect to the AMS commitment, which is dominated by rice. Administered price increases and/or the level of government purchases are being restricted in order to keep the total AMS within the bound level with the result that government purchase prices are now close to the levels observed in the domestic market. As a result, rice farming has become relatively less profitable and is likely to remain so, although support is still high.

Direct payments, notably to livestock, fruit and vegetable producers, for disaster relief and in the context of retirement programmes or direct household income support, are limited. Capital grants and interest concessions to purchase inputs like farm machinery and fertilisers, to help farmers to adopt modern technology or to improve buildings and equipment were traditionally the main components of **reduction of input cost** expenditures but increasing amounts of public money were spent to subsidise the operating costs of irrigation systems in the 1990s. The government has also been actively involved in the provision of high quality seeds and animal breeds to farmers.

Government expenditures on **general services** have increased significantly in recent years, mainly because of rural infrastructure measures. They mainly consist of land consolidation and irrigation

improvement programmes. Research, education and extension expenditures are also an important item in general services.

Government expenditures for public stockholding are relatively high and, since 1992-93, there has been a clear increase in government expenditures for assistance to downstream industries. Some of this support is to improve equipment and facilities, some is to subsidise the operating costs of co-operatives and other downstream companies and some is to compensate them for their losses in pursuing price stabilisation operations.

Some measures have been implemented to restore the **environment,** especially to treat polluted soils and more recently to deal with livestock wastes. A larger initiative to prevent pollution and encourage a more environmentally friendly agriculture was launched in 1996. Specific targets have been set to reduce fertiliser and pesticide use by 2004 through a more effective application of the former and the development of integrated pest management. The development of inputs with lower toxicity and lower residues is also planned. Extension services are to be very important in implementing such measures. Efforts to improve soil quality will be continued and a system to monitor water quality will be introduced. In addition, sustainable agriculture has become a top priority of the new government formed in 1998. It is not envisaged that economic instruments such as taxes would be used to achieve the targeted reductions in fertiliser and pesticide use. However, Korea is committed to reduce input subsidies, such as fertiliser subsidies, which have been reduced over the years but still existed in 1997. The increasing consumer demand for safe agricultural products with low levels of residues is acknowledged by the government and by farmers. This should help the development of a more sustainable agriculture in Korea.

Regulatory reform has become an important feature of Korea's economic policy in the first half of the 1990s. In the agricultural sector, it has affected farmland, the marketing of food products, including rice, as well as the distribution of agricultural inputs such as feedstuffs, pesticides, fertilisers, machinery and farm equipment. It has also begun to address food safety concerns and to improve inspection services.

Policy assessment and further reform

During the review period 1979-97, government intervention has been pervasive in the Korean agro-food sector, at all levels of the food chain, from the provision of inputs to farmers, to the purchase of commodities to stabilise domestic prices and the control of imports, through to the processing and marketing of food products. The high degree of intervention is reflected in the high levels of support to Korean agriculture, as measured by the PSE and total transfers, mainly provided in the form of market price support.

Support in general reduces economic efficiency by distorting the allocation of resources between sectors in the country and at the international level. In the case of Korea, the level of resources in agriculture is still relatively high compared to most other OECD countries, in spite of the rapid decline recorded in the past thirty years as a result of economic development. The significance of government intervention in agriculture for the economy as a whole is indicated by the share of total transfers in GDP – 5 per cent –, the share of agriculture in total government expenditures – 11 per cent –and by the level of total transfers per head of the population estimated at US$518 in 1997.

Because of support, Korean farmers have not been stimulated to improve economic efficiency although productivity has improved greatly. In particular, structural improvement was probably impeded as sufficient income could be derived from a small area due to high support levels and intensive use of subsidised inputs allowing high levels of land productivity to be reached. In addition, strict regulations on land sale and transfer and on farm size have limited farm size increases and any subsequent efficiency improvement. Capitalisation of support into land values could also be an impediment to land transfers in the future, although high land prices are also attributable to competition with other land uses. On the other hand, in the case of Korea, the distributional impact of support linked to production levels is not as biased as it can be in other countries because land in Korea is relatively equally distributed between farms.

Globally, by limiting the transmission of world price signals to Korean farmers, **market price support** has prevented farmers from adjusting to international market conditions. Not only has the domestic mar-

ket been protected from outside influence and competition, but regulations governing domestic prices and other interventions have limited competition even within the closed domestic market. However, although high levels of domestic intervention and support have been maintained, a large degree of market opening has occurred for certain commodities, especially crops such as wheat, maize and soybeans, with large quantities being imported at low tariffs. For these commodities, consumers pay prices that are close to world market levels with the government absorbing the losses on higher priced domestic production.

Although the economic situation probably makes such a change difficult in the short term, consideration should be given in the longer term to a move away from supporting prices to more direct forms of assistance. **Direct income payments** not linked to production and targeted to specific objectives are a more effective and transparent way to provide support to farmers without affecting consumers and with less distortion to the allocation of resources in the domestic market. On-going research on the feasibility of implementing direct payments targeted to less favoured areas or for environmental purpose is to be encouraged. The administrative costs of providing such targeted payments could be very high given the large number of farmers but the Ministry of Agriculture and Forestry already has a highly developed administrative structure through its own activities and those of co-operatives so that the additional administrative burden might not be too great. Currently, some limited direct support to small scale farmers and older farmers is envisaged and Korea introduced a system of early retirement payments for farmers in 1997, which should facilitate structural adjustment. As recommended by the 1998 OECD ministerial policy principles, any new direct payment should be targeted to specific outcomes and, as far as possible, decoupled from production and input use.

The Korean government is preoccupied by the impact of the **Uruguay Round Agreement on Agriculture** on farm incomes. In the 1990s farm household incomes increased more slowly than urban household income. This trend predates the Uruguay Round and may be more a reflection of the fact that urban incomes have increased sharply reflecting labour shortages up to 1997. The market opening that began during the second half of the 1980s and strengthened by the Uruguay Round Agreement on Agriculture has introduced some competition in the domestic market. It has also contributed to the increase in the value of Korean imports of food products. Self-sufficiency in grains has been falling but has permitted the development of a grain-fed livestock industry. Exports have increased, but not to the same extent as imports and the agricultural trade deficit has widened in recent years. Given the importance of trade and investment liberalisation to growth and welfare, the current short-term difficulties should not deflect Korea from its market opening efforts.

Food security is a major concern of the Korean people and authorities, and is also considered by the new government as one of the major objectives of agricultural policies. However, achieving this objective through self-sufficiency in staple foods has been costly to taxpayers and consumers, for the environment and in terms of structural adjustment. In any case, Korean agricultural production is to a large extent reliant on the import of inputs. Korea is aware of this seeming contradiction among the different objectives that it sets and for the policies implemented in pursuit of them. Reflecting this, an intensive research effort is on-going to find production methods applicable in Korean conditions that would allow high productivity to be maintained while reducing the negative environmental effects. A step in the right direction would be the progressive removal of all remaining subsidies to fertilisers and pesticides that are harmful to the environment. In the longer term, it would be useful to explore options to achieve the desired level of food security through a combination of measures and actions involving production, trade and strategic stockholding.

Higher food prices constitute a significant burden on Korean consumers who spend a significant share of their income on food. Inefficiencies in the functioning of **downstream industries** are likely to have aggravated this phenomenon. There is a clear need to develop downstream industries in Korea through structural investments but subsidising their operating costs may have slowed the necessary restructuring. In addition, support to farmers, lack of competition at all levels and various regulations affecting the marketing of agricultural products may have been brakes to the development of efficient agro-food industries. Recent efforts made to improve marketing structures and reinforced as one of the

top priorities in the future, together with a greater emphasis on consumers demand, constitute positive developments.

It is not clear to what extent the intervention of co-operatives in the handling of government purchases and in the distribution of inputs to farmers has facilitated or hindered efficiency. In any case, efficiency in the agro-food sector is likely to be higher in regions and sectors where there is competition between co-operatives and private companies. In particular, the government should make sure that co-operatives and private companies can compete on equal terms, including for access to support to capital investments.

Input subsidies have allowed Korean agriculture to reach high levels of land and labour productivity, and to achieve self-sufficiency in some commodities including rice. But there have been some negative impacts on water and soil. Moreover, subsidies to reduce the cost of inputs to farmers and investment subsidies to industries do not seem to have permitted the emergence of a competitive upstream industry. Steps have already been taken to address these problems and should be pursued vigorously.

Research and extension seem to have been quite efficient at developing technically productive methods and inputs adapted to Korean natural conditions and at transmitted them to farmers. But improving farmers' skills in economic management and marketing would also be beneficial to Korean agriculture, as has been recognised in the new policy directions set by the government.

Efforts to improve **infrastructures** should lead to efficiency gains, especially in the processing and distribution systems. Such measures should be implemented with a view to improving price transmission along the agro-food chain to the benefit of both producers and consumers. Land improvement, especially through irrigation and reclamation, should be carried out in a sustainable way to make sure natural resources are not damaged by more intensive agricultural use. Finally, with increased budget constraints, there will be a need to resolve conflicting priorities in the use of public money both within and outside the agricultural sector. It is therefore crucial to use available money efficiently and to avoid leakages. Recognising this fact, the Korean government is planning to carry out an economic assessment of each major project in the future.

Structural adjustment measures also involve large budget expenditures. Even if it has be slowed down, this longer term objective should be pursued, within the constraints specific to Korea, in order to improve efficiency at all levels of the agro-food chain. This could involve a dual approach, on the one hand, farm consolidation and enlargement and removing remaining impediments to the creation of viable commercial farms and on the other hand, developing non agricultural activities in rural areas as a source of off-farm employment for members of small farm households. It should also be recognised that support linked to production levels has a negative impact on structural adjustment.

The promotion of a **sustainable agriculture** is one of the top priorities in the policy orientations announced by the new government, with various policy initiatives to develop an environmentally-friendly agriculture under consideration. This represents a major positive change as, until now, little had been done to address agri-environmental issues. Korea should, in general, consider applying the Polluter-Pays Principle to deal with the negative externalities of agriculture for the environment.

Some positive steps have also been taken concerning **regulatory reform.** Although changes in land regulations have led to the removal of most formal obstacles to structural adjustment, they have occurred too recently to allow the results to be evaluated and many other factors still obstruct structural change, including high levels of support. In terms of farmland consolidation, there is still a lot to be done. The government should provide an overall regulatory framework governing land movements in order to encourage the emergence of a market for selling and leasing land. Concerning rice marketing, direct government involvement has been reduced and this should improve efficiency and responsiveness to domestic market signals. In general, the government should provide a regulatory and economic framework that permits the rationalisation of the agro-food sector at all levels and allows market solutions to be found.

Finally, **transparency in policy implementation** could be improved, in particular by limiting government interventions in the provision of inputs to farmers, by reducing the number of measures and by sim-

plifying budget mechanisms. With respect to the latter, a reform is envisaged to reduce the number of accounts and to consolidate a number of funds that have similar purposes.

In conclusion, improving the economic viability and environmental sustainability of agriculture while maintaining the objective of adequate domestic supplies presents a major challenge for Korea, a challenge rendered even more difficult by the current context of budgetary austerity and the low value of the won. Full application of the policy principles and the operational criteria of transparency, targeting, tailoring, flexibility and equity adopted by OECD Agriculture Ministers during their meeting of the 5-6 March would be an important contribution to the achievement of Korea's objectives for the agriculture sector and the wider economy. The new policy directions already being expressed and implemented constitute a move in the right direction and, even if the current economic and financial situation could slow the process of reform, should be vigorously pursued and developed in the longer term.

Chapter I

THE ECONOMIC AND AGRICULTURAL SITUATION

A. General demographic and economic developments

1. Historical and geographical context

The Korean Peninsula stretches some 1 100 kilometres north to south, bordered by China and Russia in the north. The area of the Republic of Korea is 99 313 km^2, covering some 45 per cent of the total area of the Korean Peninsula.[1] Of this, approximately 20 per cent was cultivated agricultural area in 1997 (Annex Table I.1). Much of the remaining land is mountainous and covered with forest (65 per cent of total area). Korea is situated in a temperate monsoon belt with four distinct seasons; spring and autumn are mild and sunny, summer is hot and rainy, and winter quite cold and dry. The average annual temperature is 10-13 degrees centigrade and the annual rainfall 1 300 mm, half of it being recorded between June and August. The climate is more favourable for rice cultivation than for either forage crops or cereals.

Integrating two ancient Korean kingdoms, a unified nation was established in the Korean Peninsula by the Dynasty of Silla in the 7th century. The country has since maintained its independence and cultural identity with the exception of a brief period during the 13th century and again during the period of colonisation by Japan from 1910 to 1945. Under the Dynasty of Choson, founded in 1392, Confucianism became a powerful instrument for organising the State and society, and education was given great emphasis. Land was nationalised and private ownership of land was prohibited, individuals being given a right of use only. From the 17th century onwards, commercial crops developed in parallel with a money economy and the gradual movement of the rural population towards urban centres. Accordingly, rural economies developed little by little. From the beginning of the 20th century, the rural labour force became free, most of the land was privately owned and could be freely transacted. The development of the urban economy, including commerce, stimulated the development of the economy.

In the 19th century, Korea remained opposed to Western demands to open diplomatic and trade relationships, but from the end of that century the country was gradually drawn into the sphere of influence of Japan, and eventually annexed by it in 1910, bringing an end to the Chosun Dynasty and to traditional Korea. During the period of colonisation, Korea was an important source of food for Japan. Large parts of Korea's farmland were expropriated and a significant share of rice production – up to 40 per cent – went to Japan. There was some investment in manufacturing and mining during the colonial period but the economy was poor, largely agrarian, with agriculture accounting for about half of GDP.

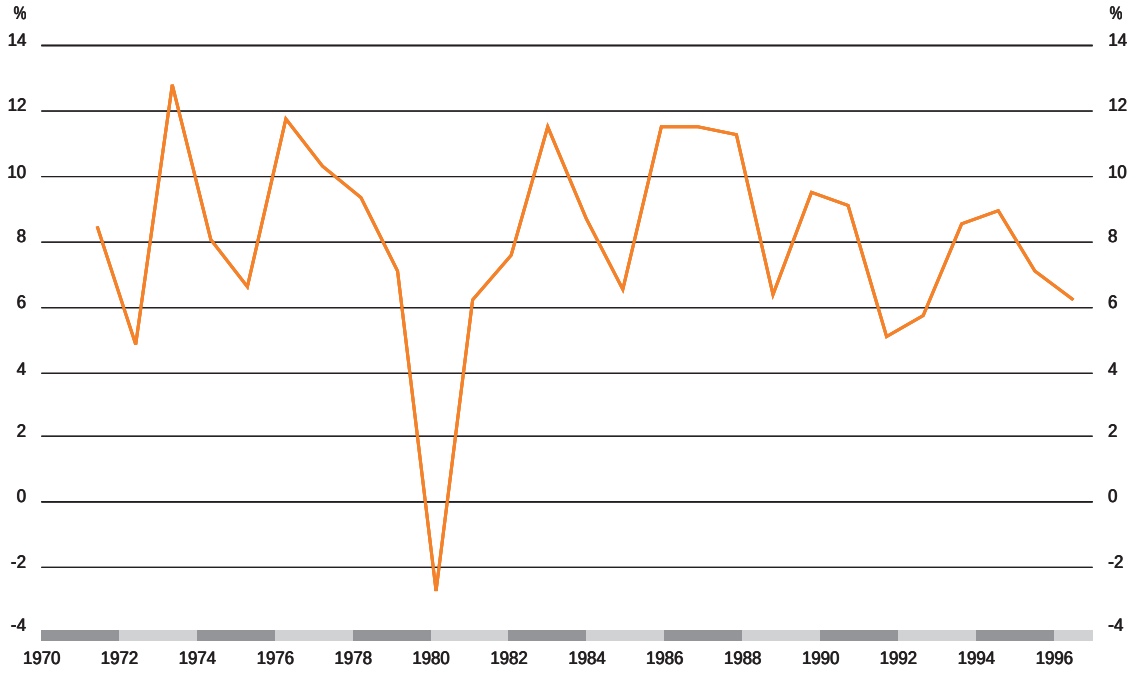
With the end of the Second World War, the colonial period came to an end but Korea was partitioned; the northern part of the Korean Peninsula becoming the communist state of North Korea, while the southern part became the Republic of Korea, hereafter referred to as Korea. United States troops were stationed in Korea during the period between the end of World War Two and the outbreak of the Korean War, provoked by the invasion of Korea by North Korea in June of 1950. The war which ensued lasted until July 1953 when an armistice was signed and was extremely costly in terms of human life – 1.5 million people lost their lives – and in terms of destruction of capital and infrastructure – 40 per cent of industrial facilities and 20 per cent of the housing stock was lost. By the time the war came to an end, the Korean

economy was in a very difficult state, predominantly agrarian, with a high degree of poverty and illiteracy, and a high proportion of its infrastructure destroyed. Moreover, the industrial resources which had existed prior to partition were situated predominantly in the north, while the south remained in possession of the bulk of the agricultural resources.

2. The rapid expansion period (early 1960s to 1990)

Korea has managed the transition from a poor, war-damaged, mainly agrarian society to a newly developed industrial society in not much more than a single generation and in so doing has recorded the highest sustained level of economic growth ever achieved. GDP grew, on average, by almost 9 per cent per year between 1963 and 1990 and on a per capita basis by about 7 per cent (Graph I.1). GDP per capita is currently slightly less than half the OECD average (OECD, 1996).

◆ Graph I.1. ***Growth in gross domestic product***
Annual percentage change from previous year



Source: OECD (1996, 1998*b*), *OECD Economic Surveys – Korea*, Paris.

Although the period of rapid economic growth dates from the early 1960s, the immediate post war period was important in laying the foundations for economic and agricultural developments in subsequent years. A major land reform had occurred in 1949 following the establishment of the Korean government in 1948. A significant share of the agricultural land had been owned by the Japanese and the Korean government proceeded to distribute that land to its tenant cultivators, within a maximum limit of 3 hectares per farm household. Large Korean landholdings were also disbanded and distributed. Powerful incentives were given for voluntary arrangements between landlords and tenants. The result was that by the end of the 1950s a relatively equal distribution of land had been achieved although with an average farm size of less than a hectare. These developments removed the last vestiges of a feudal system and contributed to a certain political stability which was impor-

tant in providing the backdrop to subsequent economic developments. However, the 3 hectare limit on farm size that was instigated at the time explains much of the structural problem now facing modern Korean agriculture (See Sections I.C and II.B.4.4.).

The immediate post-war period is also important in that it saw the beginnings of the strong emphasis on education which eliminated illiteracy and created a skilled and adaptable labour force which is thought by many commentators to have contributed significantly to the process of economic development. Reconstruction was also a key feature of this period with 90 per cent of fixed capital formation financed by foreign aid. This period was also the cradle of the "chaebol", the industrial conglomerates that were subsequently key players in the development of Korea's economy. During this period, the embryonic "chaebol" benefited from the attribution, at very favourable terms, of capital previously owned by the Japanese and were also favoured recipients of import licenses, foreign exchange and credit. They also received foreign aid funds and materials. The main theme of industrial policy during this period was import substitution and income growth virtually stagnated.

Against this background, the Korean economy entered into its high growth phase with a huge devaluation of the won (almost 50 per cent) in 1964 and the abolition of the complex system of multiple exchange rates which had existed up to then. At the same time, a sliding peg system intended to prevent a real appreciation of the won was set. In addition to industrialisation, policy was then dominated by a quest for outward oriented development based on the expansion of exports, by the emphasis placed on macroeconomic stability and by investment in human and physical capital. Export targets were set both at firm and industry levels and successful enterprises were rewarded. Although tariffs were high and quotas applied to many products, exporting firms were exempted from these protective measures allowing them to obtain inputs at world market prices. Korea became a signatory of the GATT in 1967.

The main objective of fiscal policy was to achieve a high rate of government savings to finance improvements in public infrastructure and to provide credit to the targeted sectors. The government also provided subsidies including tax exemptions and access to preferential credit. In particular, during most of the 1970s – the period of the "Heavy and Chemical Industry Drive" – the steel, petrochemical, metals, shipbuilding, electronics and machinery industries received differential treatment through the tax and credit systems.

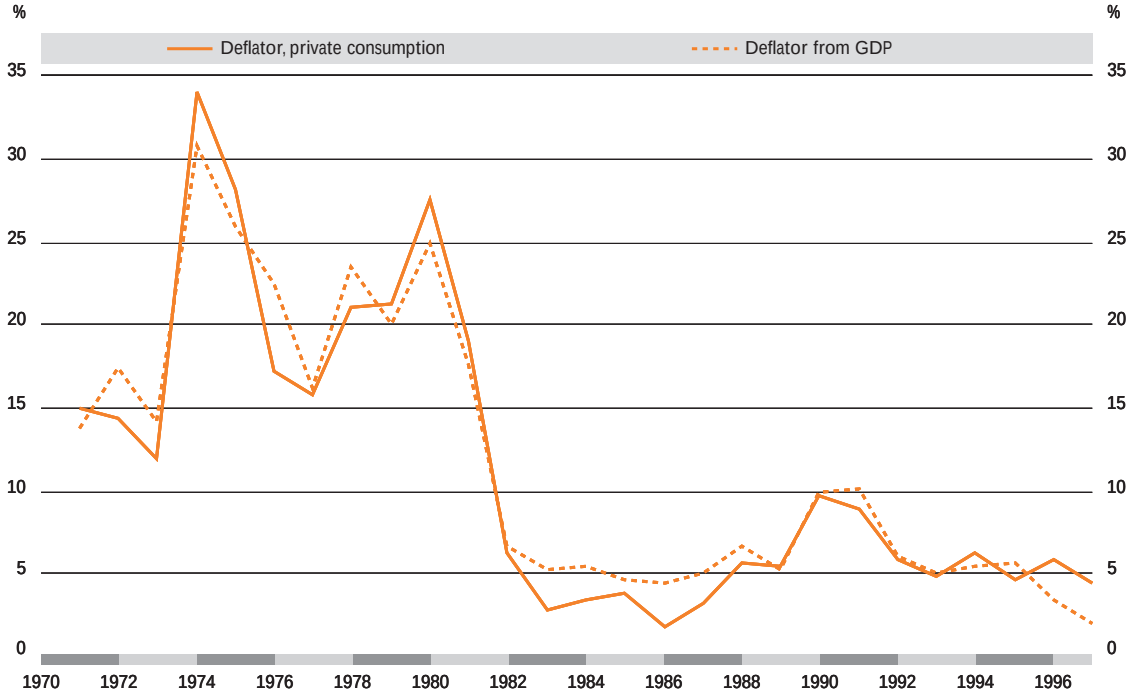
Despite the strong role played by the government in the development of the economy and the importance of defence, the size of the public sector was kept relatively low and government expenditures were limited to less than 28 per cent of GDP over the period.[2] Public sector employment was also kept low. The government wages bill was held strictly in check. From 1982 to 1990 inflation was brought down to one digit figures[3] and the budget was in surplus from 1983 to 1990 making the government today a net creditor[4] (Graph I.2).

A significant feature of the Korean economy throughout the entire high growth period has been the very high levels of investment and savings. Gross fixed capital formation as a percentage of GDP increased from 29 per cent in 1985 to 39 per cent in 1990. This level of investment is a very important element in accounting for the extraordinary growth in the Korean economy. Moreover, partly due to the tight control over foreign investment exercised by the government, most Korean investment has been financed by domestic savings – inflows of foreign capital accounted for less than 10 per cent of fixed capital formation between 1962 and 1990.

As a result of the change from import substitution to an outward looking policy of export led growth, exports as a proportion of GDP rose from only 2 per cent in 1961 to 35 per cent by the end of the 1980s (Graph I.3). Korea was the 11th largest exporter in world trade in 1996. The composition of exports has also changed dramatically over the period. At the beginning of the 1960s, exports were dominated by agricultural and fisheries products, timber and labour intensive manufactures such as textiles, clothing and shoes. Chemicals and ships became important as a result of the heavy and chemical industry drives during the 1970s and by the end of the 1980s electronic products, semiconductors and consumer electronics had begun to dominate. More recently, car exports have become significant. The destination of Korean exports has also changed. Although the United States initially

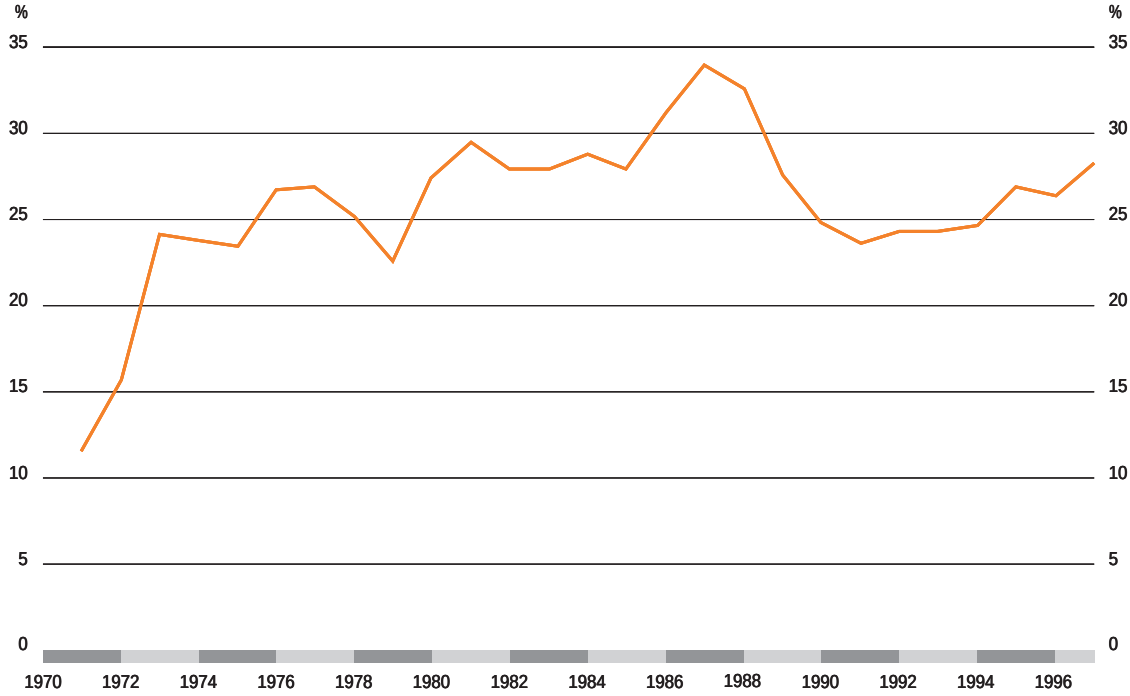
◆ Graph I.2. ***Inflation***

Annual percentage change from previous year



Source: OECD (1996, 1998*b*), *OECD Economic Surveys – Korea*, Paris.

◆ Graph I.3. ***Share of goods exports in GDP***



Source: OECD (1996,1998*b*), *OECD Economic Surveys – Korea*, Paris.

enjoyed a dominant position, since the beginning of the 1990's Asian countries other than Japan have become very important trading partners. China, in particular, is now a major trading partner.

Despite the strength of its export performance the trade balance and the current balance were in deficit every year between 1966 and 1985, and again in 1990 (Graph 1.4). These deficits were financed by foreign borrowing. As a result, Korea became one of the most indebted of the developing countries. The government took firm measures to bring the current deficit under control and strict exchange controls combined with the large current account surpluses recorded from 1986 to 1989 brought the ratio of external debt to GDP from 50 per cent in 1985 to 13 per cent in 1989 (Graph 1.5)

By the 1980s the Korean government, cognisant of the fact that the high degree of intervention in the economy was affecting competitiveness and hence the prospects for sustained growth at the levels achieved up to then, embarked on a new course involving much less intervention in specific industries and allowing much greater scope for market forces to determine the allocation of resources between sectors. This period also saw the beginning of trade liberalisation as a result of which the average tariff rate on manufactured goods began to come down significantly.

3. Recent economic performance (from 1990 to the 1997 crisis)[5]

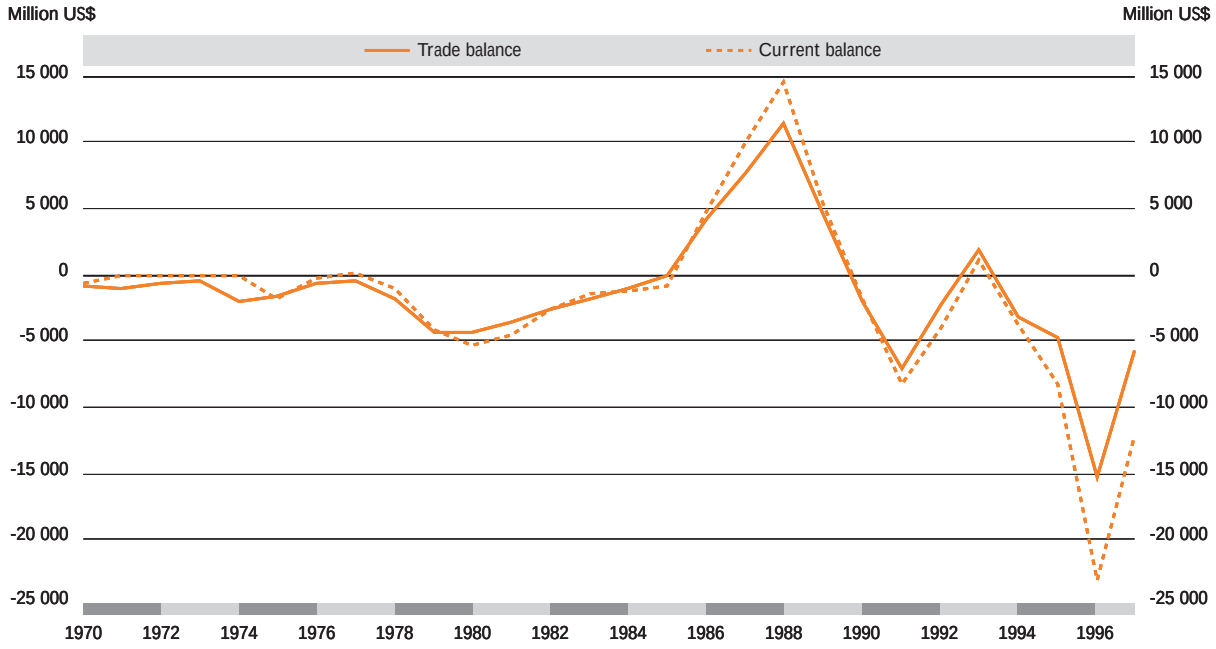
The Korean economy continued to perform strongly at the beginning of the decade recording GDP growth in the region of 9-10 per cent in both 1990 and 1991. The cyclical downturn which occurred throughout 1992 and 1993 reduced growth to less than 6 per cent, a relatively poor outturn by Korean standards at the time but still high growth relative to other OECD countries. Through 1994 and 1995 the Korean economy again began to expand strongly and GDP growth during these two years approached an average of 9 per cent. Growth faltered again in 1996 due *inter alia* to a weak export performance as the won appreciated and the price of semiconductors – one of Korea's largest exports – fell sharply but GDP growth was still 7 per cent in 1996. Recovering gradually from the severe 1996 terms-of-trade shock, the economy grew by 5.5 per cent in 1997. At the end of 1997, however, a financial crisis hit Korea (see section below). Detailed information on the causes and consequences of this crisis can be found in the most recent *OECD Economic Survey of Korea* (OECD, 1998*b*).

The strong growth of the Korean economy was, until the crisis, mirrored by employment growth which continued unabated until 1997. Employment was rising at an average annual rate of between 2 and 3 per cent during the first half of the decade, with the exception of 1993 when it slackened to less than 2 per cent. The unemployment rate fell to 2 per cent in 1995 and 1996, the lowest rate in the entire OECD area and reflecting a *de facto* labour shortage. This, despite an average working week in the manufacturing sector that, at just below 50 hours, is the highest in the OECD area.

In recent years Korea has made efforts to increase the labour force by encouraging greater participation by women (in 1996, only 49 per cent of the female population worked), by persuading older workers to remain in or return to the labour force and by allowing for some immigration. The population of Korea is 46 million (1997) and is growing at a rate of slightly less than 1 per cent per annum, just above the OECD average growth rate. There is a low and decreasing dependency level – the number of people younger than 15 and older than 64 as a proportion of those aged between 15 and 64 – although the index of ageing, as measured by the number of people over 65 years old as a proportion of those younger than 14, has increased from 10 per cent in 1977 to 28 per cent in 1997 and is expected to continue to do so in the coming years.

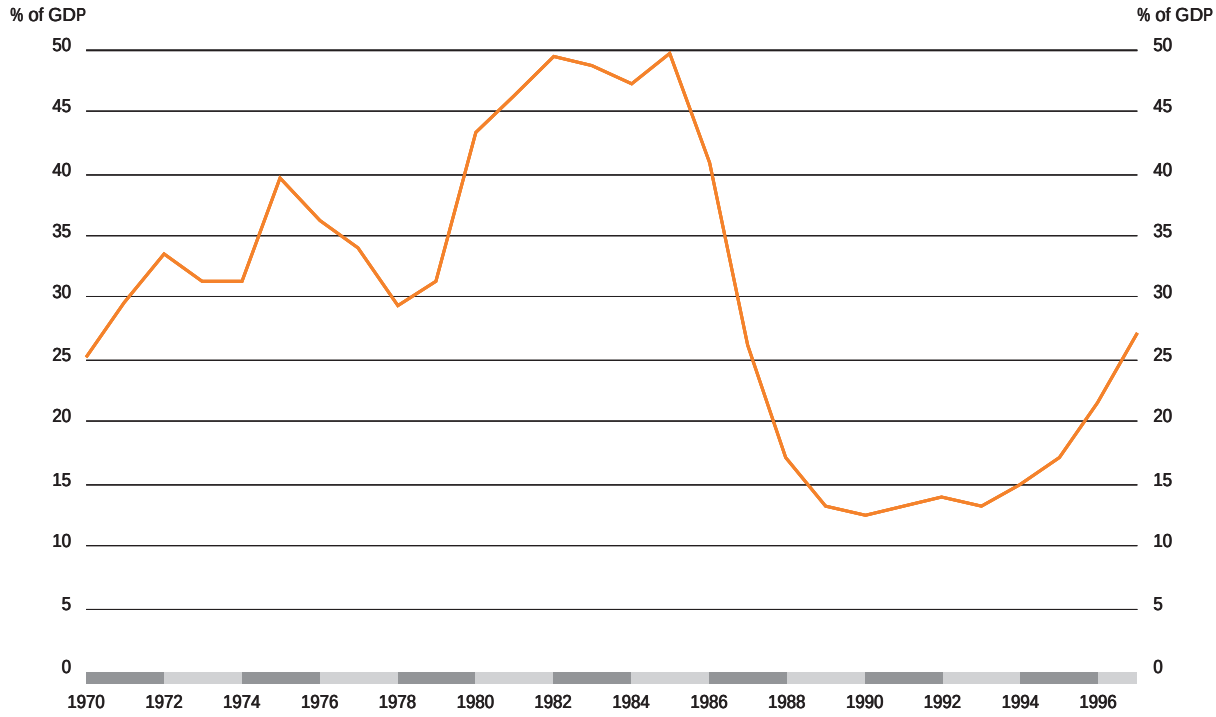
As might be expected in an economy with relatively scarce labour, wages and salaries increased strongly in Korea up to 1997. Nominal wages rose by more than 16 per cent per annum at the beginning of the decade. The rate of increase slowed during the 1992/93 cyclical downturn, although at 11 per cent was still significantly above the inflation rate as measured by the GDP deflator. It rose again in 1994, but in 1995-96 wage increases were again in the 10-12 per cent range. Real earnings rose by about 7 per cent during 1996 adding to already growing fears about the competitiveness of the economy, although there are indications that labour productivity also rose strongly offsetting the impact of higher wages on unit labour costs..

✦ Graph I.4. ***Trade balance and current account balance***



Source: OECD (1996,1998*b*), *OECD Economic Surveys – Korea*, Paris.

✦ Graph I.5. ***External debt as a share of GDP***



Source: OECD (1996, 1998*b*), *OECD Economic Surveys – Korea*, Paris.

Again, reflecting cyclical factors, inflation, as measured by the GDP deflator, was high at around 10 per cent at the beginning of the decade but fell to around 6 per cent by 1995. Korea was then at the upper end of the scale in terms of its inflation performance relative to other OECD countries. Subsequently, inflation fell to 3.4 per cent in 1996 and 2.3 per cent in 1997. During the same period gross fixed capital formation has been above a third of GDP, a level it had reached by 1990. This compares to an OECD average of about 20 per cent during the same period.

The public sector is still relatively small; in 1994, for example, public sector employment was only 4.5 per cent of total employment, compared to an average in the OECD area of more than 18 per cent, and transfer payments represented only 8 per cent of GDP in 1993, the lowest level recorded among the OECD countries for which these data exist (OECD, 1996, Table 3).

Despite the high level of government investment, the high level of household savings has resulted in a financial surplus which averaged slightly more than 0.3 per cent of GDP over the period 1990 to 1996. As a result the government's financial assets now exceed public debt by a large margin. The government implemented further significant increases in infrastructure investment under the five year plan which ran from 1993 to 1997. The main areas for increased investment were transport and environmental infrastructures. Much of this expenditure was financed by the central government through earmarked taxes.

Korea's export growth slowed slightly in the first half of the 90s and then recovered due to strong growth in Southeast Asian markets. In 1995, exports represented 27 per cent of GDP. As imports increased faster than exports, the trade balance, having been strongly in surplus during the second half of the 1980s, became negative again in 1990 and has since remained negative every year except for 1993. This was also the case for the current account balance and has resulted in a growing dependence on net capital inflows. By 1995, the current account deficit was in the region of US$9 billion or more than 2 per cent of GDP. A further worsening of the external account occurred in 1996 when imports grew by 12 per cent compared to 4 per cent for exports (in current dollar terms) and the current account deficit widened to more than US$23 billion. This prompted voluntary organisations (consumer movements, private sector companies) to launch frugality campaigns to dissuade Koreans from both the purchase of luxury imported goods and foreign travel. In 1997, the Korean economy recovered from the 1996 terms-of-trade shock and the current account deficit fell to US$9 billion.

4. The 1997 crisis

Prior to the late 1997 economic crisis, Korea exhibited favourable macroeconomic conditions. This however masked growing financial market tensions and serious structural problems. In particular, the corporate sector was excessively indebted, using short-term debt to finance investment. By the end of 1997, the debt to equity ratio of the corporate sector was around 400 per cent, about 100 percentage points higher than a year earlier. This, combined with a poorly-supervised, shaky financial system left Korea vulnerable to shocks in an increasingly global financial market. Already in mid-1997, rising financial costs exceeded profits which were depressed by slower growth and the decline in the terms of trade. Later in the year, the depreciation of the won further strained the corporate sector, leading to bankruptcies including amongst the thirty-largest chaebols. This had a devastating impact on Korea's financial system already undermined by poor profitability. Non-performing loans of commercial banks rose from 4 per cent of total credit at the end of 1996 to 6 per cent at the end of 1997.

Korea experienced a foreign exchange crisis at the end of 1997 in the wake of severe financial turbulence in several south-east Asian economies. Faced with the threat of a default on its external debt, at the beginning of December 1997, Korea received a US$57 billion rescue package led by the IMF. Despite this package, the exchange rate continued to weaken to almost 2 000 won per dollar by the end of the year, while interest rates doubled to 30 per cent. However, due to the emergence of a large current account surplus and to rescue measures, the won had stabilised between 1 300 and 1 400 to the dollar since April 1998.

The economy is in recession with a fall in GDP estimated by the OECD at 4.7 per cent for 1998. In December 1998, the OECD expected Korea's GDP to resume growth in 1999 at 0.5 per cent. The 1997 crisis had a quick and severe impact on labour markets and employment growth, reduced to

1.4 per cent in 1997 due to poor performance in the last quarter, was negative in 1998. From a low 1996 level, the unemployment rate increased rapidly from the end of 1997, reaching 5.9 per cent by the first quarter of 1998 and 7.6 per cent by June 1998 despite a sharp decline in participation rates. It is expected by OECD to remain at 7.3 per cent by the end 1998 and to rise to 8.3 per cent in 1999. As a result, wage increases were more limited in 1997 than in the previous year (5 per cent against 12 per cent). Initiatives taken by the government and many private firms at the beginning of 1998 indicate that wages and salaries, especially overtime and bonuses, will be under intense pressure in order to save jobs.

The sharp rise in import prices due to the depreciation of the won temporarily boosted inflation. As a result, the GDP deflator is expected to reach 6 per cent in 1998, but to return to a moderate 3 per cent in 1999. With declining imports and export growth sustained by the large depreciation of the won, the current account rose to a surplus equivalent to 16 per cent of GDP in the first half of 1998 (US$22 billion). According to OECD, the current balance is forecast at 12.5 per cent of GDP in 1998 and 9.9 per cent in 1999 (OECD, 1998*a*, 1998*b*).

5. Recent policy directions

From a highly interventionist and protectionist approach during the 1960s and 1970s, Korean economic policy became less directive in the 1980s. The government started to move away from targeted firm and product specific policies to much more general approaches designed to facilitate growth and development in a much less "directive" way than previously. Policy became functional aimed at providing the physical and human infrastructure needed in order to maintain the high growth rate of the economy and encouraging education, research and development in science and technology. With this new approach has come a measure of privatisation and deregulation as well as a growing emphasis on competitiveness.

Trade liberalisation began in the early 1980s with successive tariff reduction programmes. By the completion of the implementation of Uruguay Round commitments, the average tariff will be in the region of 6 per cent and almost 90 per cent of all tariff lines will be bound. Quantitative restrictions on imports have been gradually removed. By the year 2001, all restrictions will have been removed except on rice which is governed by the Special Treatment provision of the Uruguay Round Agreement on Agriculture. However, with a view to reducing the very large bilateral trade deficit with Japan, Korea continues to maintain import bans on a large number of Japanese products under the Import Diversification Programme. State trading remains for a number of commodities (See Section II.A.2).

More recently, increasing attention is being paid to deregulation and improving competitiveness as government seeks ways to maintain the momentum of economic growth. Areas subject to a measure of deregulation include telecommunications, distribution, land zoning and, as will be discussed in more detail in a later section, the use and sale of farmland. Investment, previously subject to government approval, is being liberalised in the petrochemical, semiconductor, power generation and oil refining industries.[6] The Korean Fair Trade Commission has broadened the scope of its activities. It has been given the status of a ministerial agency and has been assigned a dual mandate to improve competition and to reduce concentration in industry.

Financial deregulation began in 1993 with the Blueprint for Financial Reform. Since that date interest rates have been liberalised on all loans and on most deposits. However, quotas continue to be applied to lending to small and medium enterprises and policy loans are still used but are of declining importance. Liberalisation of international capital movements has been slower but some progress has been made. Control on long term capital inflows have been relaxed, easing foreign direct investment, allowing foreign capital an increased share in Korean owned firms and allowing Korean businesses to borrow in foreign currencies. Short term capital outflows have also been liberalised but short term inflows are still forbidden. A detailed five year programme adopted at the end of 1995 will bring about a clear acceleration of the transition to an open capital market, although it will not bring about full liberalisation of inflows. All these changes reflect a recognition on the part of successive Korean governments that continuing government intervention could diminish the competitiveness of the economy and prevent it from maintaining the rapid growth achieved during the past 30 years.

Nonetheless, measures taken up until 1997 were not able prevent the crisis affecting Korea. In particular, Korea failed to liberalise long-term capital flows to the same extent as short-term flows, as shown by the dominance of short-term debt in Korean foreign debt. In order to overcome this crisis and to boost confidence in the Korean economy, restrictive macroeconomic policies were put in place as stipulated by the IMF agreement and a number of steps were taken to open capital markets, restructure the financial system and strengthen prudential supervision, increase market flexibility and encourage corporate restructuring. Measures were also taken to reform labour markets and improve social safety nets (see OECD, 1998*b*, Box 1).

B. The significance of agriculture in the Korean economy

The rapid development of the Korean economy is nowhere reflected more dramatically than in the changing role of the agriculture sector. A decline in the share of agriculture in GDP and employment is almost a universal feature of economic development. The speed of economic development in Korea has been such that the decline has been particularly compressed. From about 50 per cent of GDP just after the Second World War and from about a third in 1965, the share of agriculture fell to 5 per cent in 1997. Its average percentage decrease was slightly above 4 per cent per annum during the 1970s and 1980s and accelerated to 5 per cent in the first half of the 1990s (Graph I.6). However, due to technical progress the volume of agricultural production increased strongly during the 1960s and 1970s and has continued its progression, although at a more modest pace and with a lot of year to year variability during the second half of the 1980s and during the 1990s.

There has been an even steeper decline in the share of agricultural employment[7] in total employment, falling from more than 50 per cent in 1960 and 1970 to 11 per cent in 1997 (Graph I.6). This represents an average decrease of 5 to 6 per cent per annum over the period 1975-95. In the case of employment, the fall in agriculture's share reflects a steep absolute decline in the numbers employed in agriculture. These fell from 4.8 million people in 1970 to about 2.3 million in 1997. The exodus from farming in Korea created a major source of labour for the developing industrial economy and was therefore an important aspect of the development process. With 11 per cent of the labour force producing about 5 per cent of GDP it is clear that the sector is currently significantly behind the rest of the economy in labour productivity terms, although the productivity gap is at least partly explained by the fact that a large proportion of the agricultural labour force is not employed full-time.

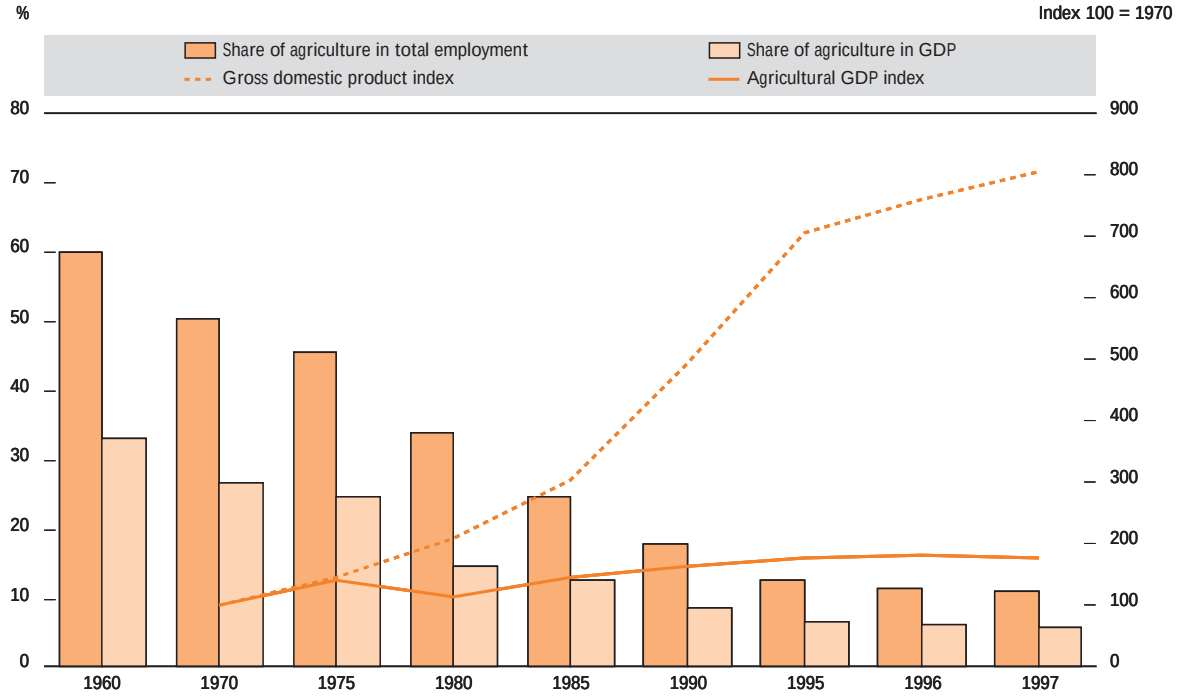
As Korea is a large net importer of food products, agricultural imports are important in Korea's overall trade balance. They represented around 20 per cent of merchandise imports in 1970 but fell to only 5 per cent in 1997 as non-agricultural imports grew at a much faster rate. In current US dollars, agricultural imports were valued at about US$7.6 billion in 1997, a 24 fold increase since 1970. Korea exports small quantities of pigmeat and speciality agricultural products mostly to Japan. These exports, valued at US$1.5 billion in 1997, are – at 1 per cent – unimportant relative to total exports or relative to Korea's agricultural production (Graph I.7).

At the beginning of the period, half of urban household expenditures was on food (Annex Table I.3). Reflecting economic development, the share of food in consumption expenditures has fallen dramatically over the period. Nonetheless, at 29 per cent in 1997, it is still much higher than the OECD average of about 13 per cent (OECD, 1998*d*).

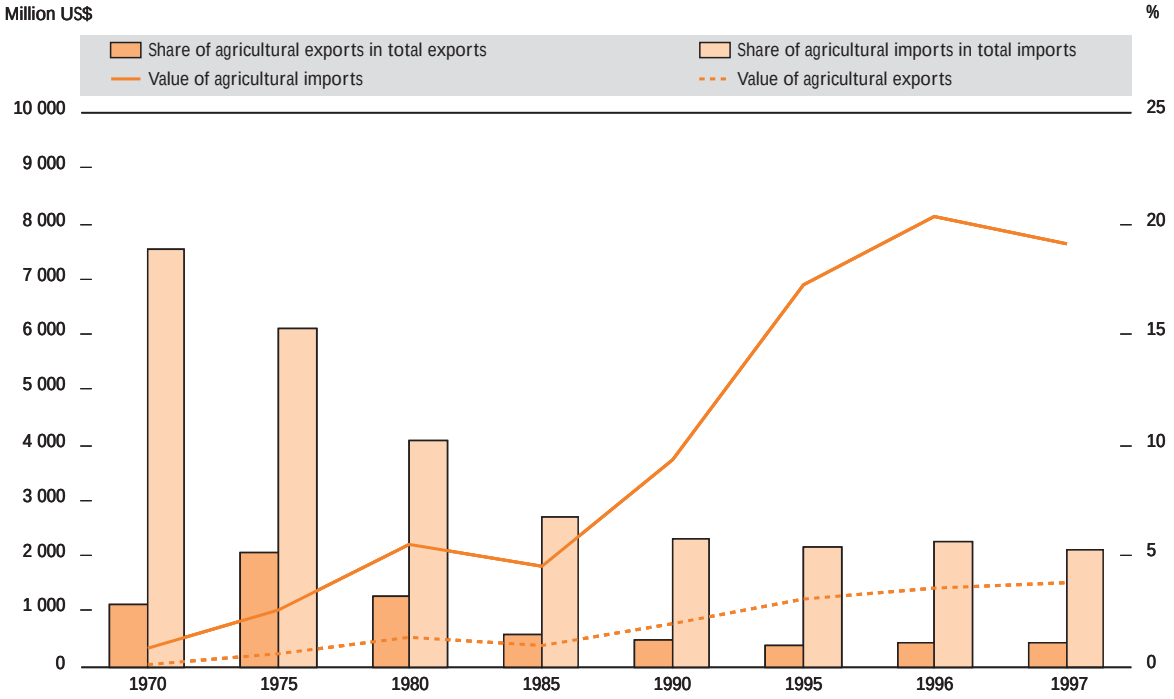
Over the years government expenditures on agriculture, including budget outlays for loans to the sector, have represented a growing proportion of agricultural GDP, rising from 12 per cent in 1985 to 37 per cent in 1997, a significant part being loans. At the same time, the share of agriculture in total government expenditures grew from 6 per cent in 1975 to 9 per cent in 1985 and 13 per cent in 1995. It then fell to 11 per cent in 1997 and this decline is likely to continue.[8]

These indicators of the role of agriculture in the Korean economy are summarised in Annex Table I.3. It should be noted, however, that for political, strategic and cultural reasons, agriculture has a particular

◆ Graph I.6. ***Contribution of agriculture to the economy***



◆ Graph I.7. ***Contribution of agriculture to trade***



Source: National Statistical Office (1997), *Major Statistics of Korean Economy* and OECD Electronic Data Products.

significance in Korea which is not reflected in these simple indicators and which will be important for explaining and evaluating certain aspects of Korean agricultural policy in later chapters.

C. Developments in the agricultural sector

Rice, which is the staple food in the Korean diet, remains the dominant crop in Korea's agriculture, both in terms of production and land use although livestock products, fruits and vegetables are becoming increasingly important. Korean agriculture is characterised by very small farms in physical terms. Average farm size has been growing slowly despite a large reduction in the farm population and in the number of farms.[9] To compensate for the loss of labour and small farm size, and in pursuit of Korea's objective of food security through domestic production, agriculture has become very intensive with regard to input use such as fertilisers, pesticides and machinery, and high yield varieties have been adopted. Although agriculture production has increased as a result of productivity gains, Korea is a major net importer of food products, in particular grains other than rice. The Korean agro-food sector is fragmented accounting for a relatively small share of the economy; co-operatives play a large role in the handling and processing of domestically produced commodities and in the provision of inputs to farmers.

1. Output

As of 1997, the total cultivated area in Korea was slightly less than 2 million hectares or just under 20 per cent of the total land area (Annex Table I.1). Despite intensive efforts to increase it through drainage, irrigation and reclamation the cultivated area has tended to decline due to industrial and urban development. The share of cultivated land in the total land area fell from 23 per cent in 1970 to 19 per cent in 1997 while the share devoted to "other" (*i.e.* industrial, urban, etc.) increased to 16 per cent from less than 10 per cent over the same period. Despite the reduction in the cultivated area, agricultural production in Korea more than doubled between 1970 and 1990 as a result of land and labour productivity improvements. In 1997, agricultural production was valued at 29 trillion won (Annex Table I.3), of which over three-quarters consisted of crops. Over the period 1970-97 the share of fruits and vegetables, milk, meat and eggs in total production grew faster than that of cereals[10] and soybeans as the former require less land, are more labour intensive and are subject to rapidly growing consumer demand linked to rising incomes (Graph I.8).

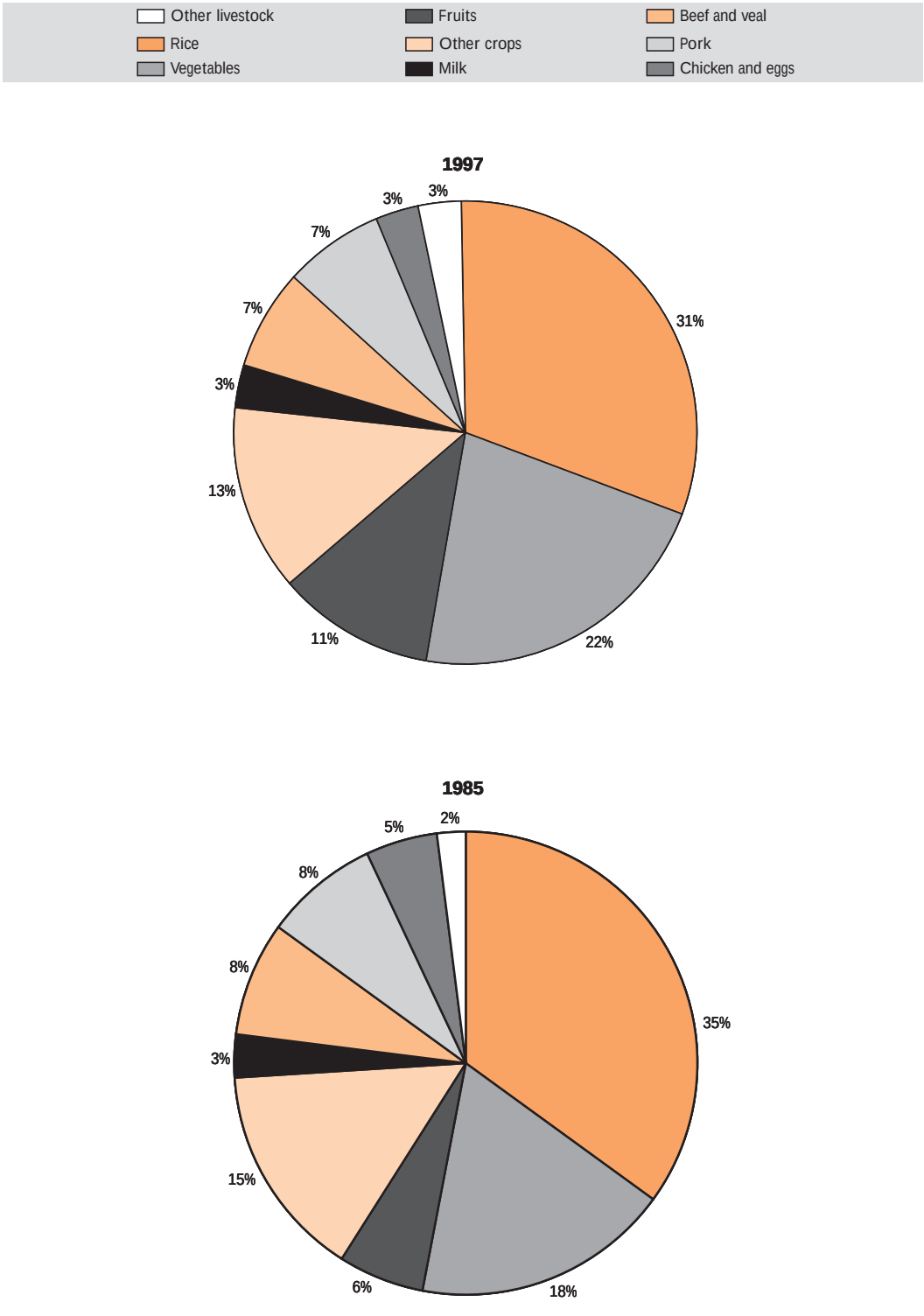
While the demand for food has been strong and diversified, production capacity has gone down for major crops and/or has shifted towards more profitable crops. Korea's self sufficiency ratio for basic foodstuffs[11] fell from 81 per cent in 1970 to 27 per cent in 1996. When feed grains are excluded, self-sufficiency reached 52 per cent in 1996 compared to 86 per cent in 1970.

1.1. Crop production

Rice is by far the most important single product and the dominant grain in Korea as shown by its contribution to agricultural production and land use. In 1997 it accounted for 31 per cent of total production and about 55 per cent of total cultivated area. However, the importance of rice in the value of agricultural production decreased rapidly in the 1970s and more slowly in the 1980s. At the same time, rice production rose to a peak of 6 million tonnes in 1988. It then declined as profitability fell relative to fruits and vegetables and the high yielding tong-il variety was abandoned. In 1997 rice production amounted to 5.5 million tonnes. the area occupied by paddy fields, used mainly for rice production, followed the same pattern (Annex Table I.1).

Among crops, only barley and soybeans accounted for more than 1 per cent of production in the mid-1980s but their share in the value of total production has since fallen and production was only 259 000 tonnes and 156 000 tonnes respectively in 1997. In parallel, there has been a significant fall in the area planted to barley and soybeans over the period 1970-1997 as their relative profitability decreased. The decline in barley production has been spectacular: in 1970 barley production was worth 44 per cent of the value of rice production but had fallen to less than 5 per cent by 1997. Production of other grains is negligible in Korea. Wheat production was only 7 000 tonnes and maize production 87 000 tonnes in 1997.

✦ Graph I.8. ***Composition of the value of agricultural production***



Source: MAF, *Statistical Yearbook of Agriculture and Forestry*, various years, Seoul.

From a very low level, the area planted to fruit has grown at a sustained rate over the same period to reach almost 9 per cent of the total cultivated area in 1997. The share of fruits in the total value of production was over 11 per cent in 1997. The importance of vegetables in land use fell slightly in the 1980s but recovered significantly in 1995. Vegetables were grown on 19 per cent of the total cultivated area in 1997. As a result, vegetables now account for 22 per cent of the total value of production. The main fruits and vegetables produced in Korea are garlic, red pepper, apples, water melon, and mandarins as shown in Annex Table I.4. Ginseng and sesame seeds are more important in value than in quantity. As a consequence of the 1997 crisis, greenhouse fruit and vegetable production suffered from higher input costs although export opportunities were strengthened by the devaluation of the won.

1.2. Livestock production

The importance of crops has diminished slightly in value terms as livestock production (milk, beef and veal, pigmeat, chicken and eggs) developed during the period 1970-95. For example, milk, pigmeat and poultry production have doubled over the last 10 years, while beef production increased by 30 per cent and egg production by 50 per cent.

The native beef cattle (Hanwoo) is still largely dominant but, due to a large extent to government promotion policies, dairy cattle numbers grew rapidly up to the early 1990s. From a low level in 1970, the number of dairy cattle increased 23-fold by 1995 but then fell slightly (Annex Table I.5). Although the number of cows increased in the first half of 1998, the downward trend is expected to continue with the implementation of a culling programme for dairy herds in 1998.[12] During the same period, the number of native beef cattle doubled with cyclical fluctuations around an upward trend. A record 2.8 million head was recorded in 1996, a 10 per cent increase from the previous year, but had fallen back to 2.6 million heads in 1998. Although greater than in 1970, the number of cattle per farm is still low compared to other OECD countries, especially for beef cattle (6 animals per farm in 1997); the number of dairy cows, however, has increased to 31 per farm, a level close to that of a number of European countries, for example France.[13] Over the period 1970-95, the development of hog and chicken production has been significant – the number of hogs increased sixfold and chicken numbers fourfold – and the rationalisation of the sectors has been spectacular. Hog farming rapidly became a full-time activity as most part-time farmers were discouraged by cyclical price variations. While in the process of rapid commercialisation, chicken production still attracts many family farms because it can be done on small holdings, with low capital investment and does not require specific skills. The Korean livestock sector suffered from the sharp devaluation of the won against the dollar in December 1997 because of its dependence on imported feed, in particular cereals. However, as cereal prices are low in US dollars, the effect of the devaluation has been somewhat offset and the expected impact on livestock numbers has not materialised.

2. Regional characteristics

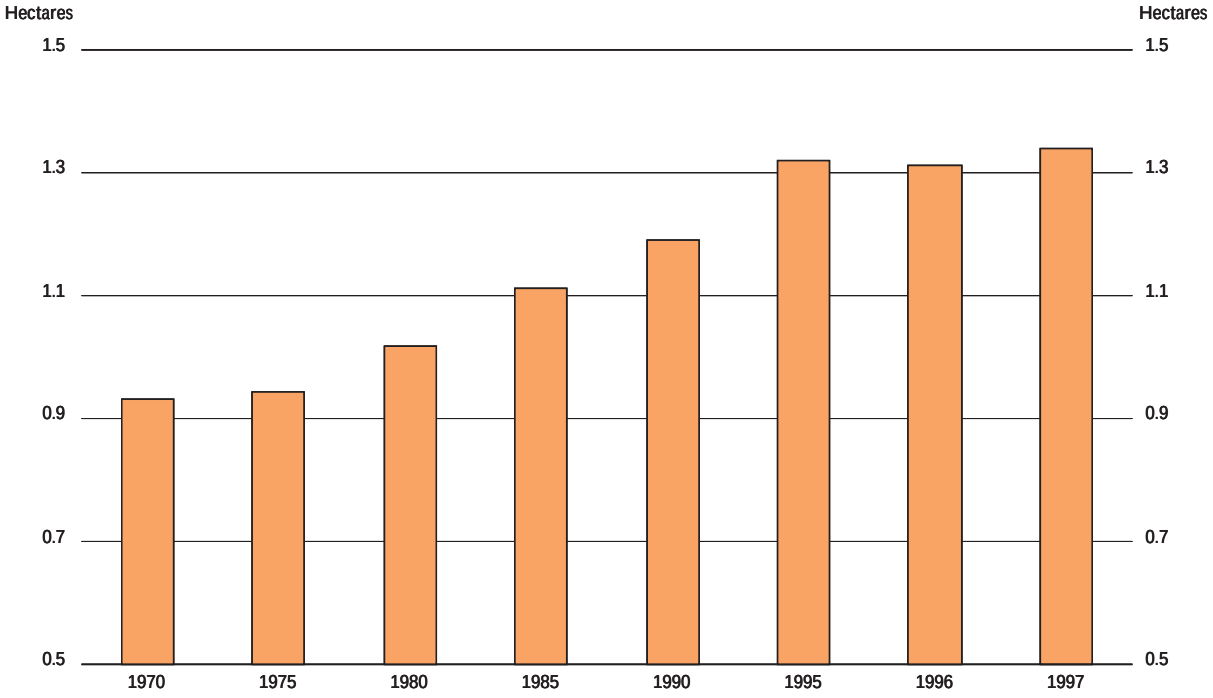
As more than 40 per cent of the Korean population is concentrated around Seoul, agriculture has developed mainly in the southern regions of Korea, such as the provinces of Chung-Nam, Cholla and Kyungsang which account for 90 per cent of the total paddy fields. Among these provinces, Cholla is highly dependent on agriculture and produces the largest quantity of grains. Spices such as red pepper, onions and garlic are also produced mainly in Cholla province which accounted for about half of the domestic production in 1996. Fresh vegetable production is located primarily close to metropolitan areas while a large share of potatoes (30 per cent) comes from mountainous areas, particularly Kangwon province.

3. Farm structure

A combination of factors, including regulations governing the sale and transfer of land, the imposition until recently of a maximum land holding of 3 hectares[14] and the role of land as a family asset to be preserved, means that average farm size in Korea is extremely small. Although the average area farmed per household in 1997 was almost 50 per cent higher than in 1965, it was still only 1.3 hectares (Graph I.9, Annex Table I.6). Korea has a relatively equal distribution of holdings, with little variation between

regions and farm types. Regional average farm size ranged between 0.7 and 1.5 hectares in 1997. In addition, almost 60 per cent of farms have less than 1 hectare and only 5 per cent have more than 3 hectares, although this latter category is showing the most rapid increase.[15] Most Korean farms are mixed general farms although the number of specialised farms, notably in the production of livestock and greenhouse vegetables, has increased (SUH, Chong Hyuk, 1993, Table 2).

◆ Graph I.9. ***Average farm size, 1970-97***



Source: Annex Table 1.6, Annex 1.

Most farms are owner-operated (over 90 per cent in 1990) but a significant share of the cultivated area is leased (around 30 per cent in 1990).[16] While there have been legal restrictions on the leasing and purchase of agricultural land, informal arrangements have developed whereby farmers may actually cultivate much larger areas.[17] For example, in order to overcome the former 3 hectares limit, farm families have used strategies such as assigning land holdings to different family members. There has also been a considerable development of subcontracting of some production and harvesting operations which has allowed economies of scale to be achieved even with seemingly very small farms.

4. Characteristics of the agricultural labour force

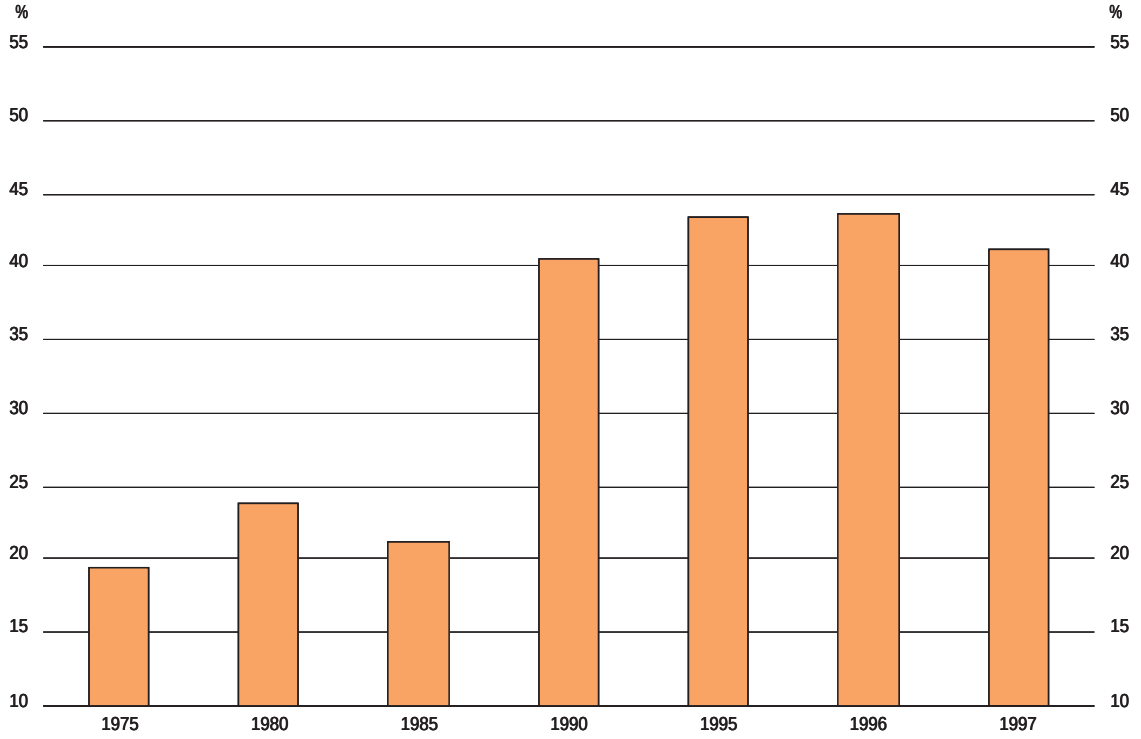
As seen in Section I.B, there has been a rapid decline in the agricultural labour force, both in absolute terms and relative to the total labour force. The farm population[18] in 1997 was less than a third of its 1970 level (Annex Table I.6) at 4.5 million persons or about 10 per cent of the total population. The proportion of the farm population over 50 is increasing rapidly: it has more than doubled between 1980 and 1997 and is now around 47 per cent. All other age groups have experienced a fall in absolute as well as relative terms but the sharpest decline was recorded in the younger than 19 age group whose share of the farm population fell from 45 per cent in 1980 to 21 per cent in 1997. There is now a slight but growing predominance of women in the farm pop-

ulation, especially older women. Women over 60 represent 32 per cent of all women in agriculture compared to only 9 per cent in 1970.

The decline in the number of farm households has been commensurate with that of the farm population. There were about 1.4 million farm households in 1997 compared to 2.5 million in 1970. During the same period, the number of people per household also declined sharply in line with the general demographic and social trends. It was 3.1 in 1997 compared to 5.8 in 1970.

The number of households mainly engaged in agricultural activity is now much lower than it was at the outset of the period due mainly to the reduction in the number of full time farms. On the other hand, part time farming has developed and in 1997, part time farm households (defined as farm households in which one or more members are engaged in jobs other than farming) represented 41 per cent of the total compared to 19 per cent in 1975 (Graph I.10). Among part time households, those for which more than half of the income comes from non agricultural sources (Part time II) have recorded the highest growth from 7 per cent of all households in 1970 to 27 per cent in 1997. This trend may be caused partly by industrialisation and urbanisation but could also reflect a commercialisation of farming. In recent years, opportunities to work off the farm in crafts or local industries have increased in line with the development of rural industrialisation policies (see Section II.D on rural development)

◆ Graph I.10. ***Share of part-time farm households, 1975-97***



Source: Annex Table I.6, Annex 1.

The agricultural sector played a crucial role in Korean economic development as the source of a plentiful supply of labour to new industries. On average, over the period 1970-95, 380 000 people per year left this sector to seek better paid employment elsewhere. As it was younger people who migrated, there has been a resulting deterioration in the demographic structure in the agriculture sector, a break-

up of traditional rural communities and quite severe labour shortages in rural areas. Labour shortages are becoming a deterrent to development, particularly in the labour intensive greenhouse sectors which are often located near large urban areas and which must compete for labour with relatively highly paid urban and industrial employment. Emigration out of rural areas has had, however, a positive impact on structural adjustment in the agricultural sector as shown by increases in farm size and farm income in the last 3 decades. While the process of labour-shedding from agriculture was crucial to industrial development, Korea considers that it has now reached a level of urbanisation that is creating problems such as urban congestion and pollution. Yet the quality of the infrastructure and services in rural areas lags behind that in urban areas. This is leading to a change in emphasis in policy, which increasingly seeks to achieve a more acceptable balance between urban and rural development.

5. Input use and productivity improvements

In addition to the structure of the labour force, the decline in the farm population affects many other aspects of the agricultural sector. One of the most obvious consequences has been the high growth in farm wages, which, expressed in index terms, have risen faster than commodity prices and other farm charges over the period 1975-97[19] (Annex Table I.7). This combined with limited land availability and government encouragement has led to greater reliance on purchased inputs. Over the period 1975-97 fertiliser use has risen, especially potash, and has now reached very high levels compared to other OECD countries (Annex Table I.8). Nevertheless, a slight decline in fertiliser use can be observed in recent years. In addition, mechanisation has been significant over the last 20 years as shown in Annex Table I.9. In addition to high producer prices, mechanisation has been encouraged by government programmes, including access to credit, training, establishment of farm machinery service centres in rural areas and promotion of co-operative machinery ownership and utilisation. The degree of mechanisation in Korean agriculture is very high. For example, over 95 per cent of rice was transplanted and harvested by machines, while weed control, spraying, pumping and threshing were totally mechanised by 1995 (Chung, Moo Nam, 1993).

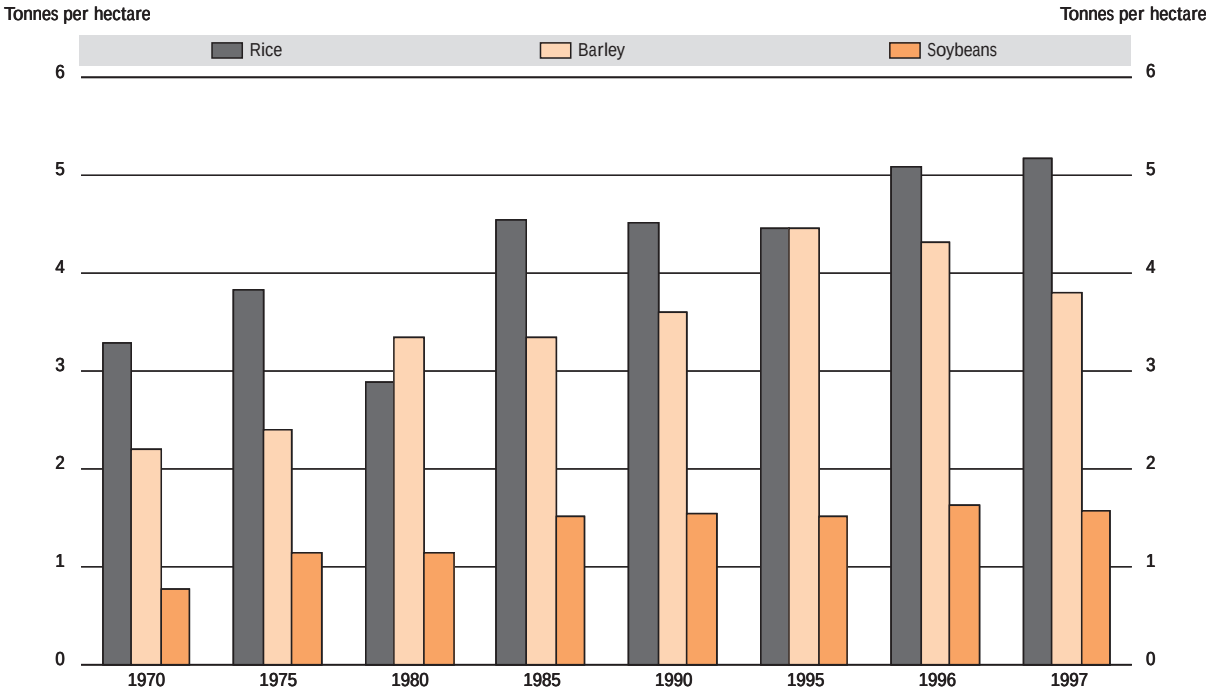
As a result of all these developments in input use, there have been significant improvements in crop yields over the period 1975-97 (Annex Table I.10). Barley and soybean yields rose by more than 30 per cent between 1975 and 1997 (Graph I.11). Most of the increase in rice yield occurred before 1985 brought about by the development of high yielding varieties and the adoption of modern farming technologies such as water management, land improvement and fertiliser use (Graph I.12). About 76 per cent of the paddy land was fully irrigated by 1997. Progress in milk production has been considerable as milk yields increased from about 4 000 kilograms per cow, per year in 1975 to nearly 6 000 kilograms in 1997, levels comparable to those attained in the most technically efficient OECD countries.

6. Prices and income

On average, over the period 1970-97 farm gate prices of all farm products have increased but at a slower rate than farm wages and charges (Annex Table I.7). Fruit prices have risen fastest, especially since 1990, followed by vegetables. Rice, other cereals and soybeans have become less profitable than fruit and vegetables. Because production depends heavily on weather conditions and can only be stored for a limited time, vegetable prices fluctuate considerably. Up to 1990, rice prices increased at the same rate as prices of other grains and potatoes but since then have increased at a slower rate. In the case of livestock products, price increases have slowed since 1990 following a marked growth in the 1970s and 1980s. From 1985 prices in capital intensive sectors, such as pigmeat and chicken production, increased more rapidly than cattle prices, the latter being particularly volatile.

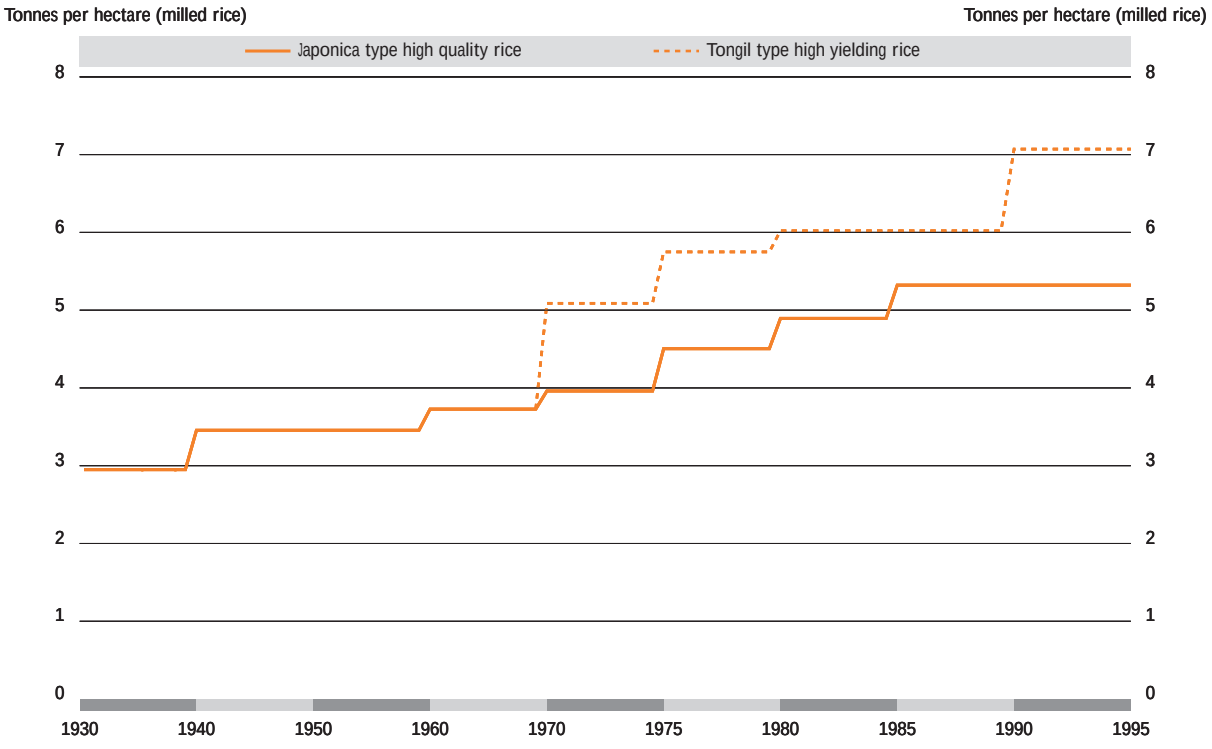
As a result of increased agricultural productivity and higher prices, real agricultural income (deflated by the Consumer Price Index) increased by a factor of close to 2.4 over the period 1975-97 compared to 4.5 for farm household income and 5.8 for urban household income. However, it continues to be extremely difficult to generate income from agricultural activities comparable to what can be earned outside the agricultural sector on such small holdings; hence farm households have strongly diversified their

✦ Graph I.11. ***Yields for selected crops, 1970-97***



Source: Annex Table I.10, Annex 1.

✦ Graph I.12. ***Yields of rice cultivars in Korea***

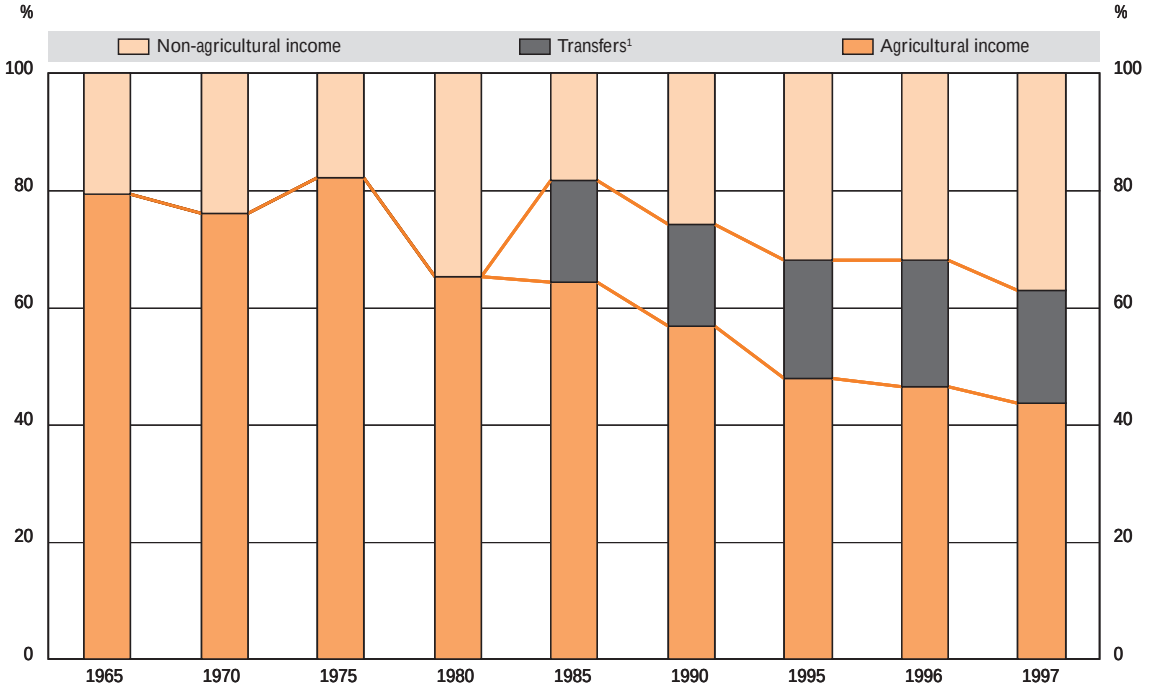


income sources and now depend on agriculture for less than half of their total incomes on average, compared to more than three-quarters in 1970 (Annex Table I.11).

During the last 10 years, the non-agricultural income of farm households grew more than twice as fast as agricultural income.[20] The development of so-called transfer revenue has also been faster than that of agricultural income (Graph I.13). Transfer revenue includes mainly rewards and donations, retirement pensions accounting for only about 3 per cent of the total in 1997 (Annex Table I.12). The increasing importance of non-agricultural income (as shown in Annex Table I.6 and discussed in the previous paragraph) has been facilitated since the 1970s by initiatives taken to improve rural industrialisation and create off-farm job opportunities in rural areas (See Section II.D on rural development). According to Annex Table I.12, in 1997 close to half the income from non-farm independent activities came from the provision of services. Among non-business receipts, salaries, wages and allowances accounted for most of the total.

The degree of dependency on farm income increases with farm size. Annex Table I.13 shows that in 1997, farm households with more than 5 hectares of land earned more than three-quarters of their income from agricultural activities while this share was less than a quarter for households farming less than 0.5 hectares. Farm income represents a lower share of total income in suburban farms than in all other areas but there is very little difference according to zones as defined in Annex Table I.14. On average, farm households have been able to achieve income levels broadly comparable to urban households over the last 20 years, although urban incomes increased steadily (Annex Table I.11). However, the income gap between farm and urban households has widened since the beginning of the 1990s and in 1997 farm household income was only 85 per cent of urban household income.

◆ Graph I.13. ***Farm household income***



1. Before 1983 non-agricultural income includes transfer income.
Source: MAFF, MAI, 1995 and MAF, *Statistical Yearbook of Agriculture, Forestry and Fisheries*, various years, Seoul.

A number of agricultural credit measures, described in Section II.B.3.2, have been put in place. They include the provision of concessional credit and a farm household debt relief programme. As a result, over 90 per cent of total farm household debt, which in 1997 amounted to 13 million won, came from institutional sources such as banks, agricultural finance institutions and post offices. This proportion has risen considerably since 1980, when institutional sources of credit represented only about half of total debt. During the first half of the 1990s, farm household debt as a share of total farm asset values has been stable at about 6 per cent. The value of total farm assets has increased considerably during the same period, due to increases in farm income and in the value of land and buildings (MAFF, 1996).

7. Food consumption

Although rice consumption per capita has been declining and is likely to continue to do so, rice still dominates the Korean diet with consumption over 100 kilograms per capita in 1997. Rice accounted for 35 per cent of calorie intake in 1996. Vegetable consumption has increased dramatically over the last 20 years and now represents around 150 kilograms per person, per year (Annex Table I.15). The increase in fruit consumption is also remarkable although consumption is lower in absolute terms. But Korean dietary traditions persist and rice does not seem to have been replaced by any other cereal. The highest consumption growth has been recorded in livestock products. Although still at a relatively low level, meat consumption has increased 5-fold over the period 1970-95. Over the years, the predominance of pigmeat in meat consumption has been confirmed. Almost zero in 1970, milk consumption is now over 50 kilograms per person, per year, less than half the consumption of most OECD countries. In contrast with most OECD countries, milk is mainly consumed as fluid.

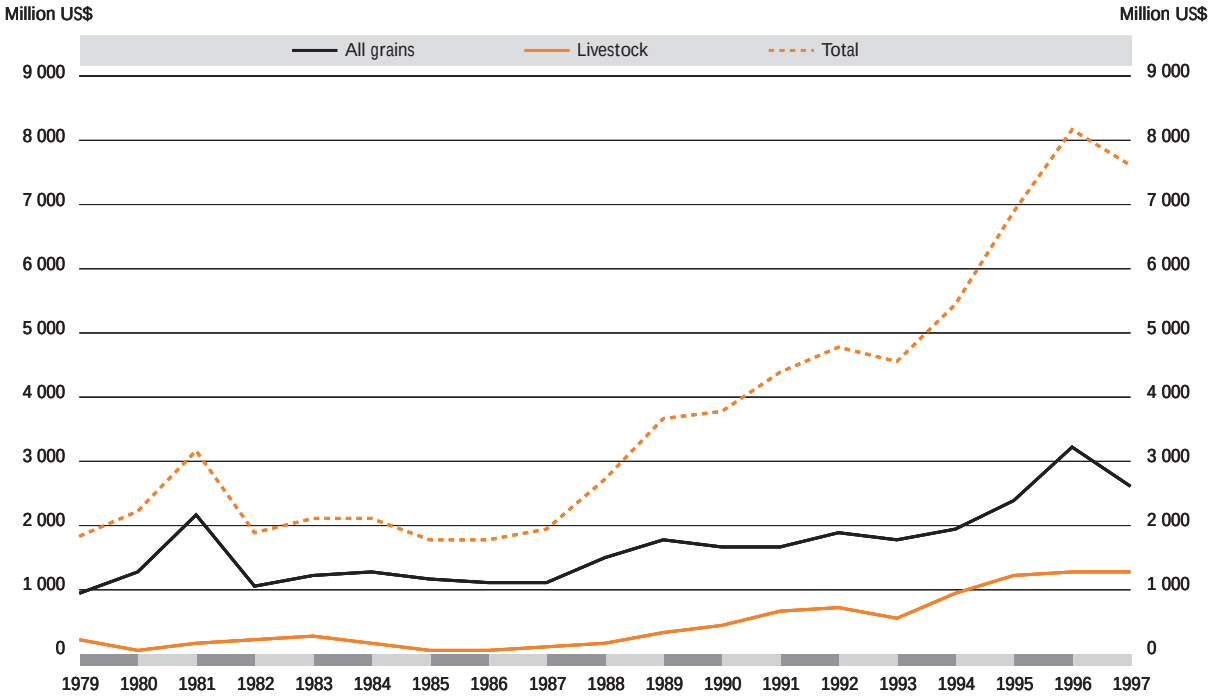
The movement towards livestock products, fruits and vegetables reflects mainly income growth. However, the Korean diet is still high in carbohydrate and low in fat compared to most other OECD countries. An increase in Western-style and processed food consumption can also be observed as convenience and quick preparation have become more important.

8. Foreign agricultural trade

Although agricultural production has more than doubled over the period 1970-97 and self-sufficiency has been attained for some major products such as rice, pigmeat, chicken and milk, the volume of Korean imports of agricultural products has increased strongly. This largely reflects rapid income growth and changes in dietary patterns and has been facilitated by a degree of agricultural trade liberalisation. Korea is thus a significant net food importer (Annex Table I.16). With a population of about 46 million and a rapidly growing standard of living, Korea is now the world's seventh largest importer of agricultural products[21] and is a very important market for exporters of cereals, including feed grains and livestock products (Graph I.14). Imports of a number of products have been restricted over the period as described in Section II.B.1 and Box II.1. No import of rice occurred during the period 1983-1994, but following the Uruguay Round Agreement on Agriculture, 115 000 tonnes (in unhulled equivalent) were imported during the marketing year 1995/96 (Annex Table I.17). Cereals, mainly wheat and maize, represent a large but decreasing proportion of agricultural imports: from almost half of the total at the beginning of the 1980s, they now account for about a third. Korea imported about 3.3 million tonnes of wheat in 1997. Imports of maize, mainly used for animal feed, increased over the period 1980-97 and are now around 8 to 9 million tonnes. At 1.6 million tonnes in 1997, imports of soybeans are also significant and growing. The second main imported item in value terms is livestock products, mainly beef and veal, which in 1997 accounted for 17 per cent of all agricultural imports. In recent years, imports of all products, in particular cereals but also fruits, vegetables and livestock products, have increased, leading to a higher trade deficit (Annex Table I.16). The main suppliers of agricultural products to Korea are the United States, Australia and, in recent years, China.

Exports of agricultural products, including pigmeat, apples, kimchi, instant noodles, ginseng and ginseng products were worth less than 20 per cent of the value of agricultural imports and 5 per cent of the value of agricultural production in 1997. Japan is the main destination of Korean agricultural exports accounting for 37 per cent of the total in 1997.[22]

◆ Graph I.14. ***Imports of agricultural products***



Source: Annex Table I.16, Annex 1.

9. Agro-food sector

Food processing industries are not yet fully developed in Korea. Their contribution to the economy in terms of GDP and employment is small relative to primary agriculture (Annex Table I.18). The share of food processing industries in GDP has been decreasing over time and in 1997, it was about half that of agriculture or 3 per cent of GDP. Value-added in the food processing sector nevertheless grew during the period 1975-90, although more slowly than in other manufacturing industries The number of employees in food processing increased more slowly than in other manufacturing industries from 1975 to 1990 and it represented only 6 per cent of agricultural employment in 1990. Its share in total employment was unchanged at roughly 1.2 per cent over the period. Macroeconomic data on employment in food processing industries are not available for recent years but information from the mining and manufacturing survey show a decreasing number of employees in food processing companies with more than 5 employees after 1990 (see following paragraph).

According to the mining and manufacturing survey, the number of food processing companies with more than 5 employees has risen by 61 per cent, accelerating since 1990 (Annex Table I.19). At the same time, the total number of employees increased by 47 per cent from 1975 to 1996 but has fallen since 1990. As a result, the number of employees per company declined from 35 to 32. Value-added as a proportion of gross sales rose from 32 per cent in 1975 to 42 per cent in 1996. Compared to other manufacturing industries, food processing suffers from higher raw material costs, in particular for traditional food, but salaries are lower (LEE, Dong-Phil, 1996). Food processing companies, in particular, those in rural areas, also lack capital to adopt modern technologies, especially for transportation and packaging. In addition, those in rural areas are penalised by poor infrastructure and lack of information.

According to Annex Table I.19, co-operatives account for a very small share of food processing and, with 10 employees per firm in 1996, are much smaller than the average firm size in the sector. However, for some domestically produced commodities like rice, co-operatives dominate first stage handling and processing, as indicated in Chapter II, and this dominance is increasing since the Rice Processing Complexes (RPC) became operational.[23] Unfortunately, data on the contribution of co-operatives by sub-sector are, in general, not available.

Total gross sales of the food processing industries were 20.5 trillion won in 1996 (Annex Table I.20). The processing of grains and bakery/noodles and that of dairy and meat products represented each 30 per cent of this total. **Upstream industries** are dominated by the production of feedstuffs with over 4 trillion won in 1996, followed by fertilisers at over 1 trillion won. Although no data are available, the annual reports of the National Agricultural Co-operatives Federation (NACF) and the National Livestock Co-operatives Federation (NLCF) seem to indicate that co-operatives play an important role in delivering inputs to farmers (see Section II.A.2).

As indicated above, co-operatives are involved in many aspects of the agro-food chain: the provision of farm inputs, including credit, but also processing, marketing, extension services, etc. Since 1981, co-operatives are organised according to a two-tier system with general-purpose and specialised co-operatives being members of the NACF in the case of crop production, and the NLCF in the case of livestock productions (see Section II.A.2 for details about the NACF and the NLCF). There has been an on-going process of restructuring in the co-operative sector as the number of general-purpose co-operatives in the NACF has declined from 1 545 in 1975 to 1 286 in 1997 (Annex Table I.21). At the same time, since the NLCF was created in 1981 its membership, especially of specialised co-operatives, has increased.

In order to stabilise the supply of raw material to processing industries, the government encourages the development of contracts between farmers and co-operatives or between co-operatives and processing companies. Contracts between farmers and the NACF for the purchase of barley, maize and soybeans are part of the price stabilisation system. More recently, contracting is being developed between farmers and RPCs. Under such contracts, RPCs provide seeds, hire companies to plant and harvest rice and control quality.

The **distribution system** is relatively inefficient due, in part, to its fragmented structure and the lack of information and adequate infrastructure. Recent government initiatives to improve efficiency are described in Section II.B.4.5 and Annex II on regulatory reform. About a third of fresh agricultural products is distributed through co-operatives to the wholesale market and the other two-thirds through traditional channels. From co-operatives, agricultural products go to wholesale markets, are then sold to retailers and then to consumers. Through traditional channels, agricultural products go from farmers to brokers, wholesale dealers, interim dealers, retailers and then consumers. In the case of pigmeat and chicken, a large share of production is sold directly to processors.

NOTES

1. Figure for 1996. Ministry of Home Affairs, National Statistical Office based on the cadastral statistics, December 1996.
2. Please note that there is no comprehensive public social security or unemployment benefits scheme in Korea. At the end of 1997, the National Pension System and the Employment Insurance System covered respectively 57 and 66 per cent of the labour force.
3. As measured by the GDP deflator and the Consumer Price Index.
4. The following Sections are illustrated by Annex Table I.2.
5. Like previous sections, this Section mainly draws on OECD Economy Surveys (OECD, 1994*a*, 1996 and 1998*b*) and is illustrated by Annex Table I.2.
6. .Investment was liberalised in half of the industries at the beginning of 1998.
7. Agricultural employment includes employment in agriculture, forestry and fisheries.
8. MAF Korea, Division of planning and budget, calculated from budget data.
9. This can be explained by several factors including limits imposed on the maximum size of individual farms, the reduction in the number of individuals per households and the diversion of agricultural land to non-agricultural uses.
10. Including rice.
11. Basic foodstuffs include all commodities under the Foodgrain Management Act regulation such as all grains, potatoes, sweet potatoes, soybeans, red beans, etc.
12. As part of the Dairy Industry Plan set up in July 1997, farmers who slaughtered dairy cows between May 25 and August 31 1998 will receive a compensation of 100 000 won per animal.
13. See OECD (1994*b*).
14. See Section II.B.4.4. on land regulation.
15. The transformation of farm size distribution in Korea over the period 1960-90 is described in LEE, Jung-Hwan (1993), pp. 31-35.
16. See Table 18 in LEE, Jung-Hwan (1993).
17. The prohibition of farm land tenancy was enacted but has never been enforced. Therefore, leasing is increasingly used to expand cultivated area as described in CHUNG, Moo Nam (1993), Table 4. The development of farm land tenure system is also analysed in LEE, Jung-Hwan (1993), pp. 26-31.
18. Farm population is defined as the number of people living more than 3 months a year in farm households in turn defined as households in which one member is engaged in agricultural activities on a holding of a minimum size.
19. But not as rapidly as urban wages.
20. Before 1985, transfer revenue was included in agricultural income.
21. FAO Trade Yearbook, 1995 figures.
22. Agriculture and forestry, excluding fisheries.
23. RPCs are multipurpose facilities encompassing all activities along the food chain, ranging from harvesting to packing. As of 1997, 253 RPCs had been created. Among them, 86 are operated by private enterprises, the others being managed by the NACF.

Chapter II

AGRICULTURAL POLICIES, 1979-97

A. The agricultural policy framework

1. The objectives of agricultural policies

The objectives of agricultural policies in Korea have been evolving but, for a combination of historical and geographical reasons, the self-sufficiency objective has always dominated policy. Efforts to reach and maintain self-sufficiency in rice have been vigorously pursued. From the 1950s to the 1970s the main effort was geared towards increasing productivity of crops, in particular rice. Since the 1980s, the issue of income parity between farm and urban households has emerged following GDP growth, and crop diversification was encouraged. In the late 1980s, the focus shifted towards structural adjustment and competitiveness to prepare for the opening of agricultural markets. In more recent years, the emphasis has been shifting again towards a broader set of objectives related to the quality of life in rural areas. More attention is paid to economic conditions in the downstream marketing and distribution systems and, particularly since the conclusion of the Uruguay Round, there is a continuing recognition of the need to improve competitiveness in the face of increased imports.

The legal framework for agricultural policy is the **Agricultural Basic Law** enacted in 1967 which defines the objectives of agricultural policy as being:

- to raise productivity and close the gap between productivity and income in agriculture and in other industries and
- to enable farmers to enjoy equal standards of living with workers in other industries.

Within this framework, specific laws are the basis for regulations or guidelines on agricultural policies. The most important laws include:

- thee **Food Grain Management Act** which regulates production and supply/demand balance of food grains since 1950;
- the **Livestock Farming Act** 1963 which concerns the development of the livestock industry;
- The **Act for Supply and Demand, and Price Stabilisation of Agricultural and Fisheries Products** established in 1976 which relates to policies regarding the supply and demand of agro-fisheries products;
- the **Farmland Act** 1994 which contains farm land regulations; and
- the **Rural Development Act** established in 1994 to strengthen agricultural production foundation in order to improve living conditions in rural areas and to develop farmland with marginal productivity.
- the **Sustainable Agriculture Promotion Act** established in 1997 to promote the development of an environmentally-friendly agriculture.

During the 1980s, in response to high levels of debt and low incomes on small family farms, several measures were introduced to stimulate the rural economy, in particular the **Agricultural and Fisheries Integrated Plan** of 1986 and the **Farm Debt Reduction Programme** of 1987. These measures were

focused on improving off-farm income through industrialisation of rural areas and on alleviating cattle breeding farmers' debt. The first comprehensive and practical attempt to improve structural adjustment in Korea's agriculture was the **Comprehensive Plan for Rural Areas Development** introduced in 1989 in response to increasing market opening resulting from the 1989 GATT decision regarding the BOP provision (see Box II.1). This plan placed greater emphasis on professional farms through increasing farm size and improving the productivity of full-time farm households through the provision of funds to buy farmland, the rationalisation of land use, land consolidation and the pursuit of mechanisation and farm infrastructure improvements. In addition, it included measures to improve the income of farmers and fishermen's households through price stabilisation of agricultural products, fostering the food processing industry and developing off-farm income sources.

Box II.1. **Agricultural trade liberalisation[1] before the Uruguay Round**

From its accession to the GATT in 1967, Korea restricted imports of agricultural commodities accounting for a large proportion of domestic production. These restrictions were applied either under Korea's waiver (restrictions applying to rice, barley, maize, soybean, potato, sweet potato, etc.) or in accordance with GATT Article XVIII.B which allows countries to maintain quantitative restrictions on imports, under certain conditions, for Balance of Payments purposes. Restrictions on beef, chicken, oranges and pigmeat were applied under this BOP provision. However, under pressure from major trading partners, but also in order to support economic growth, Korea has progressively opened markets to imports of agricultural products and reduced tariffs since the mid 1980s. In 1989, challenged by the United States, Australia and New Zealand over the ban on beef imports that had been applied in preceding years, Korea agreed to disinvoke Article XVIII.B by January 1990 and to eliminate remaining quantitative restrictions or bring them into line with GATT provisions by 1 July 1997. Accordingly, 3 three-year agricultural import liberalisation plans were announced and in the following years import restrictions on a large number of agricultural items were lifted. Over the same period tariff reductions were implemented and the average tariff rate on agricultural products fell from 31.4 per cent in 1983 to 19.9 per cent in 1990 and 16.6 per cent in 1994. Korea's agricultural imports increased sharply in response to these market opening efforts and by 1994 were in excess of US$5.4 billion, an almost threefold increase on the 1985 level.

The undertakings made by Korea in the context of the Balance of Payments understanding and not yet implemented at the time of its conclusion were incorporated into the Uruguay Round, with some modification, with the result that by 1997 all non-tariff measures had been abolished except for beef and rice (Table II.1). Uruguay Round implementation is described in detail in Box II.2.

Table II.1. **Agricultural import liberalisation**

	Total items[1]	Number of items liberalised	In percentage of total items	Commodities
	1 312		100.0	
As of 1994		1 092	83.2	
1995		154	94.9	Barley, maize, soybeans, potatoes, sweet potatoes (tariffication): apples, fresh grapes, cheese, peppers, garlic, sesame seed, skim and whole milk powder
1996		14	96.0	Grape juice, apple juice, butter
1997		30	98.3	Pigmeat, poultry, silk, orange juice
2001		8	98.9	Beef, cows (live animals)

1. Number of tariff lines at the 10-digit level.
Source: MAF, Multilateral Co-operation Division, Seoul.

Reflecting changing circumstances, the **Special Act for Rural Development** enacted in 1990 broadened the objectives of agricultural policies to encompass rural development concerns. Objectives were redefined as being:

– to increase productivity through structural adjustment in agriculture, forestry and fisheries;

– to diversify sources of income for farm households by fostering industries in rural areas; and

– to contribute to promoting the welfare of those occupied in agriculture, fisheries and forestry by improving living standards in rural areas.

In late July 1991 a ten-year, 42 trillion won programme entitled the **Agriculture and Fisheries Restructuring Plan**, which encompassed the former Comprehensive Plan for Rural Areas Development, was announced with the primary objective of improving efficiency in agriculture and rural living conditions. The underlying basis for the plan lay in the belief that significant structural adjustment would be necessary to prepare for the changing agricultural policy environment. Central to the plan was a major land reform in which, *inter alia*, the 3 hectare limit on farm size is removed. Reflecting the stated aims of the Plan, 85 per cent of the expenditure is for restructuring and the remainder is for programmes to increase rural income and the quality of rural life. These policies have been given legislative backing by the **Special Act for Rural Development**. This plan is financed through a Special Account for Agro-Fisheries and Rural Structure Improvement established in 1992.[2] The Account receives funds mainly from the General Account collected from customs duties on agricultural imports and value-added taxes on animal feed and livestock equipment.

Following the election of a new government in 1993, a further shift in policy emphasis occurred with the launch of the **New Agricultural Plan** which, in addition to reiterating the need to improve efficiency, stressed the need to improve farmers' skills as a way of assisting adjustment to trade liberalisation, to improve the welfare of farm families and living conditions in rural areas and to strengthen their attractiveness to business investments. The scope of measures was broadened to include the downstream industries as well as fishery and forestry industries. New emphasis was also given to institutional reform with a view to eliminating unnecessary regulations and restrictions likely to inhibit economic performance.

The completion of the Uruguay Round in December 1993 stimulated the Korean government to redesign its agricultural programmes because market opening called for an acceleration of restructuring efforts. After extensive consultations, a further plan – the **Agriculture and Fisheries Development Plan and the Agricultural Policy Reform Programme** – was published in 1994 confirming and strengthening the concern for improved competitiveness and rural welfare.[3] To support the plan effectively the government announced that spending from the 42 trillion fund already launched in 1991 would be completed three years earlier than initially planned and, in addition, instituted a special tax which will raise 15 trillion won over a ten-year time frame. The main innovation in the 1994 plan is the reform of farming structures and farmland regulation. Many of the policy changes introduced in the most recent years also reflect a growing recognition that deregulation is an important element in the effort to increase efficiency and competitiveness.

An **Agricultural and Fisheries Development Plan** established in 1994 is intended to assist major agricultural sectors, including rice farming, horticulture and livestock, by means of capital grants and loans to farmers for structural adjustment. Since the establishment of this plan, policies were introduced to adjust production and marketing structures to the new economic environment and to strengthen competitiveness in the agro-food sector. In July 1995, a framework was established to proceed with reforms effectively and to strengthen the evaluation procedure of investments. In 1996 a **Comprehensive Programme for Rice Industry Promotion**[4] revising the rice marketing system and restructuring the rice industry was established. This programme includes the provision of retirement payments. In addition, **a Comprehensive Programme for Hanwoo Industry Promotion**[5] was created in 1997 to strengthen the competitiveness of the Hanwoo[6] industry in view of the removal of all quantitative restrictions on beef imports in 2001. A Dairy Industry Plan[7] was also introduced in 1997 to help the Korean dairy industry adjust to market conditions characterised by declining domestic demand aggravated by the crisis and increasing imports.

Finally, Korea established in 1996 a framework for **Environmental Policy in Agriculture, Forestry and Fisheries for the 21st Century,** acknowledging the harmful effects of the intensive agricultural practices of past decades on soil and water quality and on the ecosystem and has instigated a series of policy measures to address such problems and to preserve and enhance beneficial effects (see Section II.D).

2. Agricultural institutions, services and co-operatives

The Ministry of Agriculture and Forestry (MAF)[8] has overall authority for programmes related to agricultural production and technology, land and water resource management and development, fostering the agricultural labour force, improving rural living conditions, developing marketing structures and stabilising prices, international co-operation and agricultural trade policies.

The Rural Development Administration (RDA) and the Forestry Administration are agencies attached to the MAF. The RDA is the central government organisation responsible for agricultural research and extension services in Korea. The Forestry Administration conducts the planning and administration of forestry policy. Agencies such as the National Agricultural Products Grading and Inspection Office, the Agricultural Officer Training Institute, the National Animal Quarantine Service, the National Plant Quarantine Service and Provincial Agriculture and Statistics Office are also attached to the MAF.

Although they have no role in policy formulation, farmers' co-operatives, state enterprises and other organisations are active in implementing production and marketing policies. These include the National Agricultural Co-operatives Federation (NACF), the National Livestock Co-operatives Federation (NLCF), the Livestock Products Marketing Organisation (LPMO), the Agricultural and Fishery Marketing Corporation (AFMC), the Rural Development Corporation (RDC), the Korea Rural Economics Institute (KREI) and the Korea Food Research Institute (KFRI).

Established in 1961, the **NACF** now groups 1 286 multipurpose regional co-operatives and 46 specialised co-operatives representing about 2 million farmers. Since 1990, the Chairman is directly elected by the presidents of primary co-operatives. The NACF administers price support programmes for grains and soybean (see Section B1.1.). It is also responsible for distributing inputs, in particular fertilisers and conducts research, advisory and training activities.[9]

Created in 1981, the **NLCF** comprises 146 local livestock co-operatives and 47 specialised co-operatives representing 281 000 farmers. Its objectives are to promote the Korean livestock industry and improve farm management by providing guidance, training and information. Like the NACF, it supplies farmers with modern technology and inputs and is engaged in processing, marketing and banking activities. It also operates the Livestock Industry Development Fund (LIDF) financed by various sources such as government contributions, mark-ups on livestock product imports, contributions from the Korean Racing Association, etc. At the end of 1997, the total operating fund was 3 767 billion won of which 73 per cent was used for livestock development including restructuring, feed quality improvements, livestock breeding improvement and improvement of the marketing system.[10] The role of co-operatives is currently being reviewed by a committee grouping farmers and consumers.

The **LPMO** is a non-profit organisation grouping end users. It was created in August 1988 to deal with the administration of imports of beef, pigmeat and chicken meat. It is the sole state trading organisation for importing beef. Since imports were liberalised in July 1997, the LPMO is no longer responsible for pigmeat and chicken.

Since it became a state-owned enterprise in 1967, the **AFMC** has been responsible for agriculture, forestry and fisheries marketing, including the development of marketing facilities and the management of buffer stocks, agricultural trade (in particular the conduct of state trading for a number of commodities, including administration of tariff rate quotas under the Uruguay Round) and the provision of agricultural marketing services. The AFMC has about 557 employees with four main offices: the Planning Office, the Marketing Office, the Demand and Supply Office and the Trade Office. The AFMC also has 5 regional offices and 6 overseas offices to promote agricultural exports. The Korean government is currently reviewing the structure and functions of the AFMC in order to privatise its management and to reduce the number of employees.

Created in 1990 and incorporating the former Agricultural Development Corporation, the **RDC** conducts and supervises large-scale comprehensive agricultural development, groundwater development, farmland consolidation, drainage improvement and rural housing development programmes and provides low interest loans for farm-scale improvement.

The **KREI** is a non-profit research institute created in 1978 and financed by the government. Its major functions are to act as a centre for research and policy studies in the field of agricultural and rural development in Korea and as a consultant partner for the government, agribusiness farms and farmers.

Created in 1988, the **KFRI** develops and transfers technologies related to the processing and storage of farm and fisheries products. Its main objective is to increase incomes in those sectors by developing high value-added products and food processing technology.

A number of the agencies described above have been granted state trading powers for specific agricultural products (Annex Table II.1). This is in particular the case of the MAF for rice and barley, the AFMC for food-use soybeans and the LPMO for beef. Agencies in charge of the management of quotas and the operation of auctions for the allocation of import quotas are shown in Annex Table II.2.

B. Agricultural policy measures

Support for Korean agriculture relies mainly on border protection, associated in some cases with price stabilisation measures, notably for rice. There are some direct payments, mainly to livestock and fruit and vegetable producers for disaster relief and in the form of retirement programmes or direct income support. Access to cheap, modern, labour saving inputs and technology has always been a strong preoccupation of the Korean government. Low interest loans and grants are made available to farmers as well as subsidised fertilisers and farm machinery. Programmes to improve land, including through irrigation and to consolidate farms are in place. Measures to promote the marketing and distribution of food products have only recently been developed.

1. Market price support and trade measures

These include domestic price stabilisation measures,[11] such as government purchase often operated through co-operatives, and import controls, including quotas. Rice imports were controlled up to 1994 through a licensing system that effectively resulted in an import ban except in cases of shortage. Government purchases, which until 1993 were resold by the government at a fixed retail price, are now marketed through private channels. A similar purchasing system managed by the NACF exists for barley, maize and soybeans but was abandoned for wheat in 1984. Until recently, competing fruits and vegetables were protected, mainly by import restrictions of varying severity. Imports are now subject to tariffs only. For livestock products, there is no systematic intervention by government to support prices and imports have been gradually liberalised since the end of the 1980s. From July 1997, imports of all livestock products except beef are subject to tariffs only.

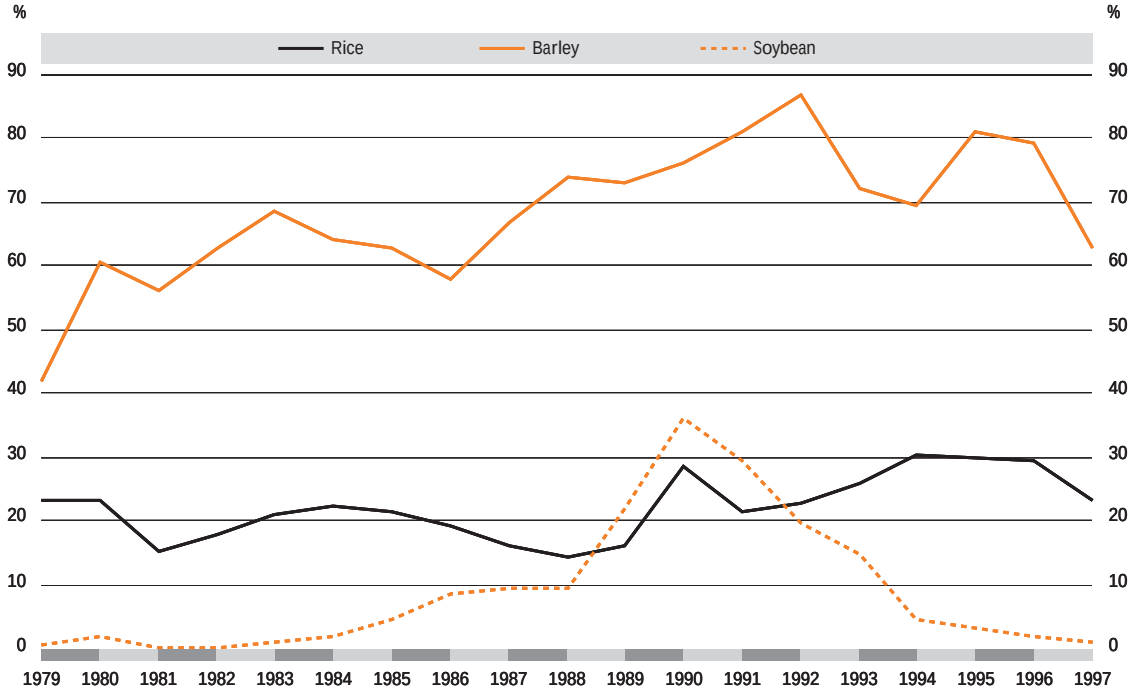
1.1. Crop products

- Rice

With slightly over 30 per cent of the total value of agricultural production, rice is the single most important commodity in Korean agriculture. It is also dominant in terms of cultivated area, volume produced and contribution to farm income. Moreover, rice is the staple food in the Korean diet. Policy in the rice sector consists of a number of interventions designed to support domestic prices, including government purchase of domestic production at an administered price and import restrictions.

Since the 1970s, the government has purchased some proportion of rice production, both the purchase price and the volume to be purchased being determined in advance. The share of government purchased rice fluctuated between 14 and 23 per cent throughout the 1980s (Graph II.1, Annex Table II.3). It reached 29 per cent in 1990, fell slightly in the early 1990s and has been around 30 per cent between 1994 and 1996. It then fell to 23 per cent in 1997 reflecting Korea's commitment to reduce the Aggregate

◆ Graph II.1. ***Share of purchased quantities in total production, 1979-97***



Source: Annex Tables II.3., II.5. and II.6, Annex I.

Measurement of Support under the Uruguay Round Agreement on Agriculture (see paragraph below on trade issues). The remainder of rice production is sold in the private market. Government purchase policy has been used not just to influence the production level but also the variety grown. During the period 1971 to 1991, government purchases were increasingly concentrated on Tong-il,[12] a long-grain, high-yielding rice variety whose cultivation was encouraged in pursuit of rice self-sufficiency. The share of Tong-il rice in government purchase increased over the period to reach 100 per cent by 1991. However, because of low consumer acceptability of tong-il rice and because Japonica rice production had increased, government purchases of tong-il rice has been abandoned. In the past, government purchases were used to create buffer stocks to be used in case of emergency and to ensure food security. Government stocks are still sold to the military, to government institutions and for relief programmes.

At different periods in the past, the government has also attempted to **regulate demand** for rice with a view to achieving self-sufficiency. For example, during the period from 1967 to 1976, government regulations required the use of alternative grains such as barley for certain processed products, it frequently banned the use of rice for processing, and schools and other government-run or controlled institutions were not allowed to serve rice on certain days.

Since 1969, there have been two **administered prices** for rice: a purchase price at which the government buys rice from producers and a resale or release price at which it sells government stocks to the market. The purchase price is determined by reference to a number of different criteria including production costs, urban-rural income disparities, the agricultural terms of trade, the expected supply and demand situation, expected inflation and the government budget deficit. Since 1988, the price has been initially set so as to cover 90 per cent of the production costs for marginal farmland, but is then finalised by the National Assembly. The price which results is consistently in excess of world prices, usually by a multiple of over 5 since the mid-80s.[13] At the beginning of the period 1979-97, annual increases in the purchase price for rice

were significant but in more recent years price increases have been more moderate (see paragraph below on trade). Since 1989 consultations on the price and quantity to be purchased have occurred through the Grain Marketing Committee.[14] Its recommendations are not binding but its role is important as it represents a number of interests including farm and consumer organisations, and academics.

The resale or release price has generally been lower than the purchase price resulting in lower consumer prices (Annex Table II.3). This price difference plus the processing costs associated with the government's activities in the rice market created a deficit in the **Food Grain Management Fund,** set up in 1970 under the authority of the Food Grain Management Act to finance government involvement in the management of basic food grains. The fund had accumulated significant deficits over the years – 8.7 trillion won (US$11 billion) by the end of 1993 (Annex Table II.4), of which 7.7 trillion won (US$9.7 billion) was attributed to rice. Until 1993, these deficits have not been met by the MAF's budget. Rather, they have been financed by long term grain bonds. The financing of the rice deficit has in this way contributed to expanding the money supply and increased inflationary pressures in the Korean economy. In 1994 the Food Grain Management Fund was abolished. Under the Food Grain Management Act, these funds were re-organised. A Food Grain Stock Consolidating Fund was created and received all the debts of the former fund while the mandate of the Special Account for Food Grain Management which previously handled the administrative costs of food grain management was extended to include management costs. In addition, the account is now funded by the General Account of the Ministry of Agriculture and Forestry.

Since the 1993 policy changes introduced by the New Agricultural Plan, most of the rice purchased from producers by the government is sold through a competitive bidding system by the NACF and there is no longer an administered resale price. This has created some internal competition with the effect that the gap between the government purchase price and the resale price has been significantly reduced. This means that consumer prices are now closer to producer prices than has been the case in the past – effectively, the dual price system operating since the 1970s has been diluted – and the growth in the deficit resulting from the shortfall between the government purchase and release price has been moderated. An effort has also been made to reduce the administrative costs associated with rice policy including government handling costs. In addition, processing costs have been sharply reduced as the government markets paddy rice directly. As a result, annual expenditures for cereal management which were close to 2 000 billion won between 1993 and 1995 fell to 745 billion won in 1997 (Annex Table II.4)., Expenditures to compensate the NACF for losses incurred in purchasing and selling rice, however, have increased significantly since 1992, reflecting higher involvement of the NACF in price stabilisation and stockholding operations.

To accompany this new plan, measures were taken to improve rice marketing, particularly through the creation of Rice Processing Centres (see Section I.C.9 about the agro-food sector). In 1997, the rice purchase system was further reformed. The government now signs contracts with farmers at the time of sowing to purchase rice, paying 40 per cent of the pre-determined purchase price before harvest. At harvest time farmers have the option to sell on the open market or to the government. For quantities sold on the open market, farmers have to reimburse the advance payment made by the government at 7 per cent interest.

Domestic price support measures were complemented – up to 1994 – by import restrictions with imports only occurring in periods of domestic shortage, mainly under the US PL480 Programme[15] during the 1950s and 1960s. In the 1970s and up to 1983, the share of commercial imports became insignificant when imports stopped as self-sufficiency was attained. By isolating domestic production from outside competition, those import restrictions contributed to maintaining domestic prices at a higher level than world prices.

A significant change occurred in rice policy in 1993 partly in anticipation of the outcome of the Uruguay Round of agricultural trade negotiations, one result of which is that Korea is committed to import rice in quantities equal to 1 per cent of domestic rice consumption in the base period 1988-90 starting in 1995 and rising to 4 per cent in 2004. This commitment arises under the Special Treatment provision which allows a small number of exceptions to the process of tariffication and binding of the resulting tariffs (See Box II.2). As a result, Korea imported 51 000 tonnes of rice from India in 1995, 64 000 tonnes from China in 1996 and 77 000 tonnes from China and Thailand in 1997 (in polished equivalent).[16] The in-quota tariff was set at 5 per cent and there is no over-quota tariff (Annex Table II.12). Moreover, Korea is committed to reduce its Aggregate Measurement of Support (AMS) by 13.3 per cent from the 1989-91 base level over

the period up to 2004. The AMS commitment does not apply to individual commodities but is, nonetheless, being used to guide the fixing of policy parameters for individual crops in this way. As the AMS is heavily dominated by support for rice, the Korean government has been seeking to adjust the domestic support policies to bring about the required reduction.[17] The government purchase price was held constant in marketing years 1994/95 and 1995/96 (Table II.2). In 1996/97 it was increased by 4 per cent but government purchased quantities fell significantly. In 1997/98 the purchase price was kept constant and purchased quantities were slightly lower than in 1996/97 to met the required AMS reduction commitment. For more details on Korea's Uruguay Round commitments see Box II.2. and Annex Table II.12.

Table II.2. **Recent changes in purchase prices and quantities**

	Units	1995	1996	1997	% change 96/95	% change 97/96
Rice						
Purchase price	'000 won/T	1 584	1 584	1 647	0	4
Purchased quantity	'000 T	1 512	1 376	1 241	–9	–10
Barley						
Purchase price	'000 won/T	926	926	926	0	0
Purchased quantity	'000 T	319	318	163	0	–49
Maize						
Purchase price	'000 won/T	455	455	478	0	5
Purchased quantity	'000 T	24	15	13	–37	–12
Soybeans						
Purchase price	'000 won/T	1 365	1 365	1 433	0	5
Purchased quantity	'000 T	5 314	3 248	1 269	–39	–61

Source: Annex Tables II.3, II.5, II.6 and II.7, Annex I.

• Barley

Barley is the second most important grain crop grown in Korea, although production has now fallen to just 1 per cent of the total value of agricultural production. It is used as food, in livestock feed and in producing malted beverages including beer.

There is a system of dual prices and support purchases similar to that of rice before 1993 except that the government does not intervene directly in the buying system. The purchase price for barley is determined according to the same procedure as for rice. Farmers and the NACF agree to both a purchase price and quantity and the government subsequently purchases the contracted amounts from the co-operatives. During the 1980s, the government purchased between 40 and 75 per cent of total barley production. This proportion reached a peak at 87 per cent in 1992 and was much lower at 63 per cent in 1997 (Annex Table II.5). Until 1993, barley was then resold at a price which was generally lower than the purchase price creating a dual price system which generated a deficit in the **Food Grain Management Fund** (Annex Table II.4). Since 1994, there is no longer an administered resale price for barley. As noted above under the discussion of rice policy, this Fund was abolished in 1994. From that date the expenses and losses associated with the support of the domestic food grain market are handled by the Special Food Grain Management Account funded directly by the budget of the Ministry of Agriculture and Forestry.

As for rice, barley was only imported when shortages occurred and no imports occurred up to 1989. However, barley has been tariffied as a result of the Uruguay Round. Korea is required to provide minimum market access equivalent to 3 per cent of base period domestic consumption (1988-1990)[20] starting in 1995 and rising to 5 per cent by 2004. These imports will be permitted at an in-quota tariff rate of 20 per cent while imports above the tariff rate quota will attract a tariff of 329.7 per cent or 397 won/kg in 1995 falling to 299.7 per cent or 361 won/kg in 2004 (whichever is the highest). In 1996 and 1997, tariff rates applied to barley imports have been well below the bound rate, at 1 per cent for feed barley and 5 per cent for malting barley. At the same time, imported quantities were well over the Uruguay Round tariff-quota provisions.

Box II.2. **Korea's implementation of Uruguay Round commitments**

Market access

In accordance with the Uruguay Round Agreement on Agriculture, import restrictions on all agricultural products except rice and rice products have been converted to tariffs by July 1997 (January 2001 for beef). As Korea has developing country status in the WTO[18], it has a 10 year period until 2004 to implement its commitments. Reduction requirements for tariffs are 24 per cent, on average, with a minimum of 10 per cent per tariff line. Flexibility to offer ceiling bindings on products previously subject to unbound tariffs has also been granted to developing countries. In 1996, the average tariff for agricultural products was 19.3 per cent (not including tariff equivalents for balance of payments related quantitative restrictions or specific rate tariffs). For rice, barley, potatoes and a number of other products, Korea has reserved its right to apply an import mark-up in addition to the in-quota tariff. A total of 118 tariff lines (those applying to products that have been tariffied) are subject to the special agricultural safeguard clause (SSG).

Tariff rate quotas have been established on some products (64 groups) under the current and minimum access provisions. They incorporate the quantitative restrictions previously maintained on balance of payment grounds[19] (Table II.3). Quotas also cover formerly prohibited imports, most notably rice. In compliance with the special treatment provision, Korea has not yet converted rice import restrictions to tariffs but has established a minimum access quota. Minimum access for rice is fixed at 1 per cent of average 1988-90 domestic consumption, rising to 4 per cent by the end of the implementation period compared to 3 and 5 per cent respectively for tariffied products. Annex Table II.12 presents a summary of market access commitments for selected products. Tariff quotas had in general been filled up to 1997 and in many cases, Korea continues to apply tariffs that are lower than bound rates. However, as a result of the crisis, the rate of fill of tariff rate quotas is less than 80 per cent on avenrage in 1998.

Korea utilises three different procedures for quota administration. There are state-trading agencies for 18 products, including rice, barley, soybeans, beef, oranges and sesame (Annex Table II.1). For 40 products, tariff quota entitlements are distributed on a first-come first-served basis or are based on historical imports. For the remaining 6 products, including sesame oil and milk powder, an auction system is employed (Annex Table II.2). Tariff quota administration has typically been delegated to the same State-trading agencies, agricultural associations or marketing organisations traditionally responsible for domestic marketing. The implementation process included revisions to eight laws, notably the Food Grain Management Act and the Livestock Farming Act, as well as significant changes to the tariff regime.

Domestic support

For developing countries, the Aggregate Measurement of Support (AMS) is to be reduced by 13.3 per cent over the 10 year implementation period. In addition, support to encourage agricultural and rural development such as investment and input subsidies is exempted from the AMS reduction commitment. Korea is committed to a maximum AMS in 2004 of 1.5 trillion won. However, as the AMS rose sharply from the base period level of 1.7 trillion won in 1989-91 to 2.2 trillion won in 1995, the *de facto* reduction needed from the 1995 level is significantly greater than 13.3 per cent. Support for rice accounts for over 90 per cent of the AMS. The second largest item is barley with 3 per cent of the AMS, the remaining items being beans, maize and rapeseed. In 1997, the current total AMS was 5 per cent the maximum permitted level.

Export subsidies

As there were no export subsidies during the base period, no reduction is required but new export subsidies to reduce the costs of marketing exports of agricultural products and internal transport have been introduced in recent years for fruits and flowers. This is permitted to developing countries during the implementation period under Article 9.4 of the Uruguay Round Agreement on Agriculture.

Sanitary and phytosanitary measures

In order to harmonise its regulation with international standards, Korea has made a number of amendments as described in Annex II (*Regulatory Reforms Affecting Agriculture, 1993-97*).

• Soybeans

Soybean production also represents around 1 per cent of the total value of agricultural production. Soybean utilisation in Korea is mainly for food rather than for feed purposes. Domestic production is relatively

small and represents a declining share of domestic consumption. Therefore, significant imports occur. Support is provided to domestic production through a combination of a dual price system and state trading.

As with barley, the government intervenes through the NACF which contracts to buy soybeans from producers at a purchase price that is determined in advance and is related to production costs and other factors such as the implementation of the AMS commitment. The government then purchases soybeans from the NACF and resells at a lower price to processors. This release price is fixed by the government – it has been set at 410 won per kg since 1989 – and is based on a pool price between the import price and government purchases from the NACF. As the purchase price has been unchanged for a number of years, participation to the programme is now very low. In recent years the quantities acquired by the NACF/Government system have been relatively small and declining – less than 5 000 tonnes since 1994 – from a total production in the region of 160 000 tonnes (Annex Table II.6).

Table II.3. **Market access commitments**

Group	Commitments	Products	Items[1]
Waiver products[2]	Not tariffied, MMA	Rice	14
	Tariffied, MMA or CMA	Barley, maize, soybean, potatoes, sweet potatoes, etc.	111
BOP products[3]	Tariffs only	Beef, pigmeat, chicken, etc.	95
	Tariffied, CMA or MMA	Dairy products, oranges, red pepper, garlic, onions, sesame seeds, etc.	
Tariff only products	Applied ceiling bindings = 150% of 1986 tariffs	Carrots, persimmons, mushrooms, pears, etc.	71
	Cut tariffs	Lemon juice, tomato juice, cabbages, Chinese cabbages	1 021
Total			1 312

CMA: current market access; MMA: minimum market access.
1. Number of tariff lines at the 10-digit level.
2. Waiver products have been subject to import restrictions in compliance with the Protocol of Accession to the GATT.
3. GATT Article XVIII.B allows developing countries with poor balance of payments position to restrict commodity imports.
Source: Korea's GATT schedule for agricultural products and MAFF, *The Annual Report on Agricultural Trend and Development,* 1994.

Imports occur under a state trading regime and are subject to mark-ups. The mark-up does not entirely bridge the gap between the domestic price and the import price with the result that the price to consumers is a blend price, higher than the import but lower than the domestic production price. Soybean imports have been tariffied under the terms of the Uruguay Round Agreement on Agriculture and current access in the region of 1 million tonnes has been granted at an in-quota tariff rate of 5 per cent. Some soybeans imports for food use or processing continue to be subject to mark-ups.[21] The quantity subject to mark-ups is set by the government based on the domestic market situation. The tariffs applicable to over quota quantities are 541 per cent or 1 062 won/kg in 1995 (whichever is the highest) falling to 487 per cent or 956 won/kg in 2004. In fact, imports in excess of the tariff rate quota have already occurred at the in-quota tariff rate between 1995 and 1997 as total imports were over 1.5 million tonnes. Currently set at 1 per cent, the applied tariff for soybean imports is much lower than the bound rate and imported quantities are significantly higher than the tariff-quota provision.

- Maize

As with the other field crops, maize production has been falling steeply and now accounts for less than one per cent of the total value of agricultural production in Korea. As with the other food grains the government operates a price support system through the NACF. The latter is purchased from the producers, with price and quantity set by contract in advance; these quantities are then sold to starch processors and manufacturers of high-fructose corn syrup at the equivalent of world prices. The quantities sold in

this way are small and declining because the price offered by contractors is not as attractive as the domestic market price (Annex Table II.7).

Maize imports were tariffied under the terms of the Uruguay Round and provision has been made for current access in the region of 6 million tonnes at a 3 per cent tariff. Quantities in excess of the tariff-rate quota are subject to an *ad valorem* tariff of 365 per cent beginning in 1995 and which is scheduled to fall to 328 per cent by 2004. As with soybeans, imports in excess of the tariff-rate quota amounts have been occurring already at the in-quota rate as over 8 million tonnes have been imported annually since 1995. The applied tariff for maize imports is now zero for feed maize and one per cent for food maize.

• Wheat

The production of wheat, even at its peak during the period under review, was always much lower than that of barley, maize or soybean (Annex Table II.8). Since 1984, wheat production has virtually ceased for two reasons: farmers switched to crops for which the growing conditions are more favourable and the government terminated its programme of purchasing wheat at guaranteed prices. There are very large wheat imports[22] and these have been subject to a tariff-only import regime since 1990. A 10 per cent tariff has been bound as part of the Uruguay Round commitments and this tariff will be reduced to less than 2 per cent by 2004. The applied tariff for wheat imports was zero in 1997.

• Horticulture and special crops

These production sectors are growing fast in absolute terms and account for a rising share of the value of production of the agricultural sector (22 per cent for vegetables in 1997 and 11 per cent for fruits compared to 18 and 6 per cent respectively in 1985). A number of fruits and vegetables account individually for more than 2 per cent of total agricultural production. These are garlic, red pepper, apples, watermelon and mandarins. In addition, special products like sesame and ginseng each represent around 1 per cent of production given their high value per tonne.

Policy intervention in the fruit and vegetable sector takes the form of buffer stocks in order to stabilise prices supported by import controls prior to the Uruguay Round and by adjustments made to tariff rate quotas. In order to assist producer organisations to stabilise fruit and vegetable markets, the government is making efforts to provide timely information on plantings to farmers.

The domestic markets for vegetables generally operate quite freely. However, if prices fall to what are considered to be very low levels, the government intervenes to remove stocks from the market. In the case of red pepper, garlic and onions, intervention occurs if prices fall below "management cost" while in the case of Chinese cabbage intervention is triggered if prices are below 70 per cent of management costs.[23] In the case of red pepper, garlic and onions, the government uses the stocks acquired in this way to even out seasonal fluctuations. Chinese cabbage acquired by the government in order to stabilise prices is simply abandoned.

The price stabilisation activities for vegetables are funded by the **Agricultural and Fisheries Products Price Stabilisation Fund** which is financed partly by the government and partly by the revenue from the sales of products purchased domestically for buffer stocks and the mark-up on imports of state traded items such as beans, soybeans, potatoes, onions, garlic, etc., (Annex Table II.1) which are managed by the **Agricultural and Fisheries Marketing Corporation.** Price stabilisation operations are sporadic as evidenced by Annex Table II.9 which shows the date and frequency of intervention in recent years. The main crops affected have been red pepper, garlic and onions. During the 1990s, annual funds available for price stabilisation fluctuated between 5 and 50 billion won. In 1996 they amounted to about 6.6 billion won covering about 2 per cent of the total volume marketed.[24]

Similarly, there are sporadic price stabilisation interventions for fruit but these are self-financing and no specific fund exists. In this sector price stabilisation is carried out by the co-operatives who buy and store commodities at times of low prices for release when prices are high. These activities are partially funded by the producers' own contributions to the co-operatives.

Some of the main fruits and vegetables were subject to import bans or other quantitative restrictions prior to the Uruguay Round. The post Uruguay Round situation is as follows. For most vegetables, including cabbage, carrots, cucumbers and mushrooms, which had already been liberalised prior to the Uruguay

Round, straightforward bound tariffs apply without any quantitative restrictions or mark-ups of any kind. Another group of products has been tariffied with over-quota tariffs as shown in Table II.3 and this group includes potatoes, sweet potatoes and beans. In all these cases tariff rate quotas have been applied but the Korean government has reserved the right to levy mark-ups, the level of which is set so as to bridge the gap remaining between external and internal prices after payment of the in-quota tariff. The revenues of those marks-ups will be reinvested in infrastructure services through a special government fund. There is another group of products which had been subject to quantitative restrictions under the Balance of Payments provisions (and subsequently under the Memorandums of Understanding of the 1989 consultations) and for which restrictions continued to apply until the dates set out in Note 6 (a-e) of Korea's country schedule. For some of those products, tariff rate quotas have been set under the terms of the Uruguay Round. These remaining quantitative restrictions were all eliminated on 30 June 1997 as scheduled. These commodities are also subject to mark-ups as specified in Note 4 of Korea's country schedule but have been subject to tariffs only at rates indicated in Annex Table II.12 from the date of liberalisation. This group of products includes onions, garlic, red peppers, oranges, Korean citrus, grapes, apples and pears.

There is no government intervention in the market for flowers. Imports of flowers are subject to a 25 per cent tariff for cut flowers and 8 per cent for other types of flowers while seeds enter with a zero tariff. Exports of flowers are increasing, but they represent only some 20 per cent of imports. In the case of sesame, there is a system of purchase from co-operatives at an administered price but it has not been used since 1986. Ginseng has been covered by a geographical origin label since 1996. Sesame and ginseng are now subject to tariffs quotas with very high over-quota tariffs, as indicated in Annex Table II.12.

1.2. Livestock products

- Beef and veal

Beef and veal production is the fastest growing of all livestock products and now represents one third of the total value of livestock production. Beef and veal consumption has also grown but is still very low relative to other OECD countries (Annex Table II.10).

There are no provisions for systematic intervention to support prices in the domestic market although the government has intervened to purchase beef cattle at times of very low prices, for example during the period 1984 to 1989. A Price Stabilisation Belt was established in 1993 but was never used and was abolished in 1995. The NLCF intervened in the domestic market in 1996, 1997 and 1998 in order to prevent a price slump in response to the BSE crisis and in 1997 as a result of price falls at the beginning of the year due to excess supply. Imports, however, have been strictly controlled by a quota system. Since August 1988 this system has been operated by the LPMO, a state trading agency which has the exclusive right to import beef. Beef imports are subject to mark-ups the revenue from which is assigned to the LIDF operated by the NLCF. This fund is used to develop the livestock industry, including through investments for structural adjustment, technical development, marketing improvements and price stabilisation of livestock products.

Import restrictions were originally controlled under the Balance of Payments provision (Article XVIII of the GATT). This was challenged by the United States, Australia and New Zealand, following a total import ban during the period 1985 to 1987 and a GATT panel was set up to look into the matter. Following the results of that panel, Memorandums of Understanding were drawn up in 1990 and again in 1993 setting a time-table for the removal of import restrictions, setting the level of quotas, the share of Simultaneous Buy/Sell (SBS)[25] in total imports (15 per cent in 1993) and the level of mark-ups. The terms of these Memorandums of Understanding have been modified by the Uruguay Round in a way that represents an acceleration of the liberalisation process.

Under the Uruguay Round Agreement the overall quota and share of SBS imports will increase up to the end of December 2000 (from 30 per cent in 1995 to 70 per cent). While mark-ups will continue, their level will decrease progressively and they will be eliminated along with state trading from 2001 onwards (Annex Table II.11). From that date imports will be subject only to tariff. As a *quid pro quo*, the previously bound tariff of 20 per cent has been increased to an initial 43.6 per cent in 1995, falling to 41.6 per cent in 2000. Meanwhile the rate of tariff applicable to over-quota trade has been fixed at 44.5 per cent falling

to 40 per cent by the year 2004 (Annex Table II.12). In 1996 and 1997, imports exceeded the quota. Imports of beef are only allowed from foot and mouth disease-free countries.

• Pigmeat

Although, in value term, pigmeat represents a slightly lower share of livestock production than beef, it accounts for more than half of total meat consumption and is becoming increasingly important for the Korean diet.

The policy for pigmeat operates in much the same way as for beef. There is no systematic, direct intervention by government to support prices but there are occasional price stabilisation operations carried out by the livestock co-operatives, including the NLCF.[26] These operations are funded by the co-operatives through the LIDF. During the period 1986-97, intervention purchases were limited to 3 years: 1989, 1991 and 1992. At the same time imports were constrained (Annex Table II.10). Pigmeat import arrangements were also applied under cover of the balance of payment provision and were challenged by the United States, Australia and New Zealand. As a result of the 1989 consultations, BOP restrictions were disinvoked but import restrictions continued.

Under the terms of the Uruguay Round Agreement on Agriculture import quotas continued up to 30 June 1997 under the minimum access provisions at the bound rate tariff of 25 per cent which had applied to this sector. Imports were already well over the quota in 1996 and since July 1997 all import restrictions have been removed. Pigmeat trade is therefore subject to a tariff only regime, but at a higher rate than the previously bound rate; from an initial level of 37 per cent falling to 25 per cent in 2004. The applicable tariff rate at the time of removal of restrictions was 33.4 per cent.

Pigmeat exports are encouraged through domestic measures aimed at improving quality and efficiency at all stages of the agro-food chain. In addition, the Korea Meat Trade Association carries out advertising and promotion campaigns to explore new overseas market opportunities.

• Chickenmeat and eggs

As growth in chickenmeat and egg production has been less than that for other livestock products, its share in the total value of livestock production has decreased. At the same time, egg consumption is growing steadily while chickenmeat consumption has quadrupled over the last two decades.

There is no systematic intervention by government to support prices in the domestic market, but there are provisions for price stabilisation operations carried out by the NLCF, with funding provided by the LIDF. There were price stabilisation expenditures for chicken every year from 1989 to 1995. Imports were strictly controlled until the BOP cover was disinvoked in 1989 but import restrictions continued under the terms agreed in the BOP consultations. Chicken imports were completely liberalised on 1 July 1997 but, as for pigmeat, the tariff to be applied from that date – 30.5 per cent – was somewhat higher than the previously bound rate of 20 per cent.

There was limited price stabilisation intervention for eggs from 1986 to 1995 as indicated by LIDF expenditures. Imports of eggs in shell have been subject to a 30 per cent tariff over the period while trade in eggs not in shell was restricted. In 1995 a tariff quota was imposed as a result of the Uruguay Round Agreement on Agriculture. It was set at 11 709.5 tonnes to increase to 19 515.8 by 2004 with an in-quota tariff rate of 30 per cent, an initial bound over-quota rate of 46.3 per cent and a final bound rate of 41.6 per cent.

• Dairy

Milk production increased more than five fold during the period 1979-97 and was slightly lower than consumption in 1997. Its share in the total value of livestock production has also increased. Policy interventions in the dairy sector are a combination of occasional price stabilisation measures (*e.g.* in 1990) combined with import controls (quota). Dairy product imports were restricted under the BOP provision and since 1989 under the Memorandums of Understanding reached following the BOP consultations. As a result of the Uruguay Round these restrictions have been replaced by ceiling bindings beginning

in 1995 for skim milk powder, whole milk powder and whey, and in 1996 for butter. Tariff rate quotas have been established for these products in line with the minimum and current access provisions. Import restrictions have been removed on cheese since 1 January 1995 and a tariff of 40 per cent, falling to 36 per cent by 2004, will apply. Market access commitments for selected dairy products are presented in Annex Table II.12.

2. Direct payments

There are some direct payments in Korean agriculture, notably in the livestock sector and the fruit and vegetable sector, or in the form of disaster payments, retirement payments and household income support. They account for a very small share of total support to agriculture but with the pressure to liberalise trade in agricultural products there is likely to be increasing resort to programmes that conform to the "green box" definition incorporated in the Agreement on Agriculture of the Uruguay Round.

2.1. Payments to livestock producers

During the period reviewed, small direct payments were granted to livestock producers for sporadic, short periods. In the most recent years, those payments were to encourage the production of high quality meat. From 1993, headage payments varying between 100 000 and 200 000 won per head according to quality grade were available to cattle breeders. Pig farmers participating in pigmeat quality improvement schemes also received payments per animal, varying according to five quality grades. For the highest quality grade, farmers have received 7 000 won per head since 1993. In 1990, a small subsidy was provided to dairy farmers participating in the dairy culling programme in order to control the milk surplus. More recently, farmers who reduced their dairy herd during a limited period in 1998 were paid 100 000 won per head of slaughtered cows.

2.2. Payments to fruit and vegetable producers

Between 1989 and 1992 producers of wine grapes received a deficiency payment calculated as the difference between the administered price and the international price paid by wine manufacturers. Acreage reduction programmes available to grape and peach producers in the late 80s to early 90s, and to mandarin producers since 1997, also included direct payments. During specific periods, farmers received between 9.6 and 16 million won per hectare of land diverted in the case of grapes and between 6.4 and 11 million won per hectare in the case of peaches.

2.3. Disaster payment

There is some limited provision for disaster payments in Korean agriculture but there is no formal insurance system. Disasters generally take the form of heavy rainfall or typhoons. Damage to crops or housing may be covered but strict limits are imposed on the level of payment and full compensation is never paid. Relief is only available to farms of less than 2 hectares and rarely exceeds 10 per cent of the losses suffered. In 1980-81, farmers who lost more than half their rice production due to cold weather were compensated through reduced farmland tax, loan interest and support for school tuition. Since 1986 rice is offered to small farmers who lost more than 30 per cent of their total production because of natural disasters. Disaster relief administered by MAF is confined to farmers.

2.4. Retirement programme

With a view to facilitating structural adjustment, provision has been made for retirement payments to be made starting in 1997. This measure is aimed at 12 000 hectares in 1997. Farmers over 65 years of age who are willing to sell or rent their land to full time farmers for a period of more than five years will be eligible and will receive a lump-sum payment of 258 won per m^2 of farmland either sold or leased (or US$2 580 per hectare), calculated as the difference between annual farming income and rent during three years. The maximum payment per farmer is 15 million won in total. The cost of this measure amounted to

27.3 billion won in 1997. Before this programme was introduced, no retirement benefits of any kind had been available to Korean farmers.

2.5. Direct household income payments

Since 1990 a number of social measures have been implemented to support the income of farm and fishing households. The main measure consists of reduced interest payments for farmers and fishermen under financial pressure, whose business is smaller than the farming equivalent of 2 hectares. Farm households with less than 1 hectare can benefit from education grants for children in vocational high schools. In addition, in 1996 the government started to contribute to an insurance system for farmers against work related accidents.

3. Reduction in input costs

3.1. Capital grants

Over the review period, there have been a number of programmes to improve the efficiency of Korean agriculture through capital investments. They often combined direct subsidies to the provision of loans at reduced interest rates. The latter are described in the following Section (II.B.3.2). Efforts to increase the mechanisation of Korean agriculture, described in Section II.B.3.4, include the provision of subsidies to farmers and co-operatives to purchase agricultural machinery. Investment subsidies for farm mechanisation account for most expenditures on capital grants. More recently, livestock producers received investment subsidies to modernise their buildings and equipment, and investments in high technology were subsidised to encourage the development of high quality products.

3.2. Interest and credit subsidies

As in many other aspects of agricultural policy in Korea the network of co-operatives belonging to the NACF and the NLCF are key players in the provision of agricultural credit and form an important element in the interface between government and farmers.

So-called agricultural policy loans have been very important in the development of agriculture in Korea. They have been provided to farmers and to co-operatives in order to *i)* encourage investments; *ii)* promote the use of land and labour saving technologies, such as farm machinery, pesticides and fertilisers; *iii)* improve structural adjustments in the sector, for example through start-up loans for new entrants[27] or through loans to help farmers buy land to increase farm size;[28] and *iv)* facilitate rural development.

The sources of funds for this purpose are multiple. The government budget provides funds directly for structural improvements. Other amounts come from public funds such as the LIDF, the Farmland Management Fund, and the Agricultural and Fisheries Product Price Stabilisation Fund. Finally, a significant share of agricultural policy loans is provided through the banking operations of the co-operatives. As shown in Table II.4, about half of the agricultural policy loans came from agricultural finance institutions (*i.e.* the co-operatives) in 1996 and 1997. In all cases, interest rates for agricultural policy loans are lower than commercial rates. In the case of loans provided through the agricultural finance institutions, the government pays the difference between the lending rate charged and the funding cost. While the average market rate for similar loans was 12.9 per cent, 81 per cent of agricultural policy loans were granted at a 5 per cent interest rate (Table II.5). A large proportion of policy loans are short-term, over 60 per cent for less than one year, while the remainder are medium- and long-term (Table II.6).

The agricultural credit system in Korea has experienced occasional difficulties to the extent that bottlenecks emerged in the system of distribution and some farmers did not have sufficient collateral to be able to avail of policy loans. A new set of agricultural credit regulations was introduced in 1994 and revised in 1995 with a view to resolving these difficulties:

- loan ceilings were increased;[29] and
- the credit guarantee fund was to be increased to 1 trillion won (from 318 million) by 2004 in order to facilitate the granting of loans to farmers with insufficient collateral.

Table II.4. **Sources of agricultural policy loans**

	Units	1995	1996	1997
Total	Billion won	6 428	7 209	8 169
Government budget	%	23.0	21.2	21.0
Public fund	%	25.6	28.7	27.7
Agricultural finance institution	%	51.4	50.2	51.3

Source: MAF Korea, Seoul.

Table II.5. **Interest rates of agricultural policy loans, 1997**

Rate	0%	3%	5%	5-8%	8%	Total
Amount (billion won)	270	631	6 650	31	587	8 169
Portion (%)	3.3	7.7	81.4	0.4	7.2	100

Source: MAF Korea, Seoul.

Table II.6. **Terms of agricultural policy loans, 1997**

Term (years)	1	2-5	6-10	11-15	Over 16	Total
Amount (billion won)	5 087	173	1 921	690	298	8 169
Portion (%)	62.3	2.1	23.5	8.5	3.6	100

Source: MAF Korea, Seoul.

3.3. Mechanisation subsidies

In response to the objective to increase agricultural productivity in a situation of growing labour shortage in the countryside, agricultural policy in Korea has emphasised mechanisation. The Farm Mechanisation Promotion Act of 1978 established a plan for farm mechanisation which consisted of farm mechanisation promotion funds, the creation of an inspection system, the promotion of shared use of farm machinery, setting up after-sales services, and safety management. In addition, imports of agricultural machinery were liberalised. The Agricultural Mechanisation Institute was set up in 1979 to promote the development and testing of machines adapted to farming conditions in Korea. Low interest loans and grants are made available to farmers for the purchase of tractors, rice transplanters, sprayers, combine harvesters, grain dryers and so forth. Eligibility for this type of assistance is determined at the local level by committees. Eligibility is dependent on the age and education of the farmer, the scale of the farm and on other factors. As indicated in Section I.C.5, the mechanisation programme for Korean agriculture has been extremely successful to the extent that the sector is now highly mechanised (Annex Table I.6).

As part of the overall policy to encourage mechanisation, fuel for agricultural use is tax-free in Korea since 1986. The taxes from which oil is exempted are a 10 per cent value added tax, a 2 per cent special consumption tax, a 15 per cent transport tax and a 2.5 per cent education tax. The concession applied to 2 489 000 kilolitres of oil in 1997.

3.4. Fertilisers and pesticides

From the 1960s onwards Korea has pursued a policy of self-sufficiency in fertiliser production which has permitted it to move from a situation of complete dependence on imports to more than complete self-sufficiency by the mid 1970s. This was achieved through a policy of investment in fertiliser plants financed by foreign loans and employing foreign technologies. The policy was motivated by the desire

to ensure food security, but also by the need to boost agricultural productivity. By the 1990s, Korea was exporting significant quantities of fertiliser to markets such as Thailand, Vietnam and China. Although Korea supplies most of its own fertiliser needs and has developed export markets, fertiliser production is entirely dependent on imported raw materials such as potassium chloride.

Until 1987, fertiliser marketing has been under total government control with the government buying from the manufacturers and selling to farmers at lower prices. These buying and selling operations have been carried out through the NACF but with the management costs met by the government. The costs of this programme appear as a deficit in the Fertiliser Account. One result of this policy of supplying cheap fertiliser has been that Korea has one of the most fertiliser-intensive agricultural sectors in the world resulting in extremely high yields for basic crops such as rice (Annex Table I.10) in spite of less than ideal topographical and soil conditions. It has also created problems of pollution.

Some efforts have been made to liberalise the fertiliser market. From the beginning of the 1980s the government permitted fertiliser manufacturers to sell directly to horticultural associations. In 1988 imports of fertiliser were permitted (although only the Fertiliser Manufacturing Companies and the NACF are authorised to import) and sales of fertiliser by the NACF were deregulated. Although there are now private fertiliser agencies, the NACF supplied 90 per cent of fertiliser sales in recent years. Even though the intention in deregulating was to eliminate the subsidy which had hitherto been granted to fertiliser users, the government decided to intervene again to absorb the price rises which resulted from the Gulf War in 1990. Although the Fertiliser Account was terminated in 1991, it was replaced by a programme to compensate losses incurred by the NACF in selling fertilisers at a cheaper price than it buys them. In 1997, the latest year for which data are available, the cost of this programme was 86.6 billion won and the cumulative cost since 1989 was in the region of 332 billion won.

Pesticides were also subsidised. Pesticides were supplied through the NACF by arrangement with the government. As for fertilisers, the government subsidised the price through the Agricultural Chemicals Account, from 1982 to 1994. Pesticides for rice production were also made available on credit. Pesticide use has increased rapidly up to 1991 but has fallen slightly since. From 1990 sales of agricultural chemicals were liberalised and farmers pay full market prices. There were still some restrictions on domestic sales of formulated products by foreign companies but they were removed at the end of 1996. The government intervenes to spray crops threatened with heavy damage from pests from the air and until 1997 also subsidised the purchase of protective clothing and small power sprayers for family farms in disadvantaged regions.

3.5. Irrigation

Irrigation water is delivered to farmers free of charge although farmers do contribute to the on-farm distribution costs. Small-scale irrigation systems are managed by farming communities under the supervision of local authorities and all expenses are paid by farmers. The average cost was around 4 500 won per 10 ares in 1997. Larger irrigation systems are managed by the Farmland Improvement Association. As those systems manage larger areas and provide public goods such as flood control, the government covers a portion of the operating expenses. This subsidy amounted to around 109 billion won in 1997. On average, farmers whose land is located in an area managed by the Farmland Improvement Association paid around 6 100 won per 10 ares for the operating costs of irrigation in 1997. Government involvement with irrigation infrastructure is described in Section II.B.4.4. below.

3.6. Other inputs

A number of programmes financed by the LIDF aim at improving the quality of Korean cattle by supporting artificial insemination and importation of high quality breeding stock, subsidising feed costs and providing health care. Annual expenditures under those programmes amounted to 3-4 billion won in the first half of the 1980s but were down to 46 million won by 1997. In the crop sector, the government manages the provision of certified seeds to farmers on a cost-recovery basis in order to improve quality. The deficit of the Seed Fund was 130 million won in 1997. Some disaster relief programmes include the provision of new seeds.

4. General services

4.1. Research, technology, extension and education

• Research and technology

Agricultural research is carried out mainly by the Rural Development Administration (RDA) whose constituent research institutions carry out research on all aspects of agricultural technology. The RDA employs approximately 2 100 researchers and 6 800 extension officers. Its main research efforts are concentrated on:

– stable and labour-efficient production of food grains;

– quality and cost-efficient production of cash crops and livestock; safe and pollution free production and adequate pest management;

– the adoption of high-technology agriculture as a means of improving the economic efficiency of the sector; and

– the development of sustainable agriculture.

In addition to the RDA, the Korean Rural Economics Institute (KREI), employing about 100 researchers, carries out theoretical research on matters related to agricultural economics and agricultural policy. Reflecting the growing demand for processed food products, the Korea Food Research Institute (KFRI) was established in 1989 to develop and transfer new food technologies. It employs 126 researchers.

In pursuit of self-sufficiency in food grains, particularly in rice, research has been heavily concentrated in the past on the development of high yielding rice varieties and in the application of production methods to increase yields on the limited amount of land available for cultivation. These efforts have been successful to the extent that, as indicated in Section I.B.3.1, Korea has achieved and maintained self-sufficiency in rice production since 1983. This achievement has not been without cost for the environment as can be seen in Section II.C.

• Extension

Extension services are provided by the Rural Development Administration (RDA), farmers' organisations such as the NACF and the NLCF, and some non-governmental organisations. Nine Provincial RDA Offices and 162 County Extension Offices operate regional extension services at the farm-gate level. About 6 800 extension officers are engaged in RDA's agricultural extension services. The main objectives of extension services have been to achieve self-sufficiency in rice by providing adequate technology to increase yields, to raise farmers' income by lowering production costs and developing high quality products based on an environmentally friendly agriculture to foster future farmers and farmers' organisation through various training programmes, to improve living standards in rural areas through the development of the female labour force and to modernise rural housing.

• Education

Agricultural education is run by the Ministry of Education. There were 47 agricultural department or college universities, 15 agricultural vocational colleges and 83 agricultural high schools in 1997. This sector is experiencing some difficulty as structural adjustment occurs in the farm labour force. Only about 7 per cent of those graduating from the agricultural high schools actually remain in the agricultural sector.

4.2. Inspection

Sanitary controls on domestic and imported livestock products along the food chain are now under the sole responsibility of the Ministry of Agriculture and Forestry and are carried out by Animal Health Laboratory and National Animal Quarantine Services. Until 1997, MAF was in charge of inspection of raw meat at the slaughtering level only and the Ministry of Health and Welfare was responsible for the inspec-

tion of domestic products and some imported meats. As food safety concerns are growing, sanitary inspection is becoming more important in Korea as reflected by the 20 per cent increase in government expenditures in this area from 1995 to 1997.

To conform with the WTO Sanitary and Phytosanitary Agreement, the Korean government has amended relevant laws and regulations. It revised plant and animal quarantine in accordance with international standards. In addition, facilities and capabilities of the quarantine services were expanded and a Safety Inspection Division was set up under the National Animal Quarantine Service. In April 1996, the Korean government established the Korea Food and Drug Administration which is in charge of comprehensive safety management of food products. To harmonise Korea's food standards and specifications with international standards and specifications such as CODEX, the government has extensively amended the Food Code. It has also introduced a series of measures to harmonise its inspection system for food imports with international standards. Those include the recognition of test certificates of authorised foreign testing agencies, the expedited clearance system for fresh fruits and vegetables and the pre-arrival inspection application system. As a result, the period for food inspection and customs clearance should be shortened considerably. Moreover, shelf-lives for all food products was liberalised in 1998 with the exception of some perishable products (WTO, 1996*b*, p.12). More details on this issue are provided in Annex II.

4.3. Pest and disease control

Pest control for crops depends primarily on pesticides although more environmentally friendly agricultural programmes including biological control are being developed. The Ministry of Agriculture and Forestry sets and supervises overall pest control strategy, while local governments are mandated to implement pest control. To minimise damage, pest forecasting services are regularly provided by the RDA, provincial RDAs and County Rural Guidance Offices. In the case of a pest outbreak, the Ministry provides subsidies to local governments covering the cost of buying and spraying pesticides. Quarantine services are agencies attached to the MAF.

As for crops, the MAF has responsibility for the prevention of animal disease while implementation is carried out by local government. Disease control includes vaccination and inspection activities (see previous Section). Veterinary services have been strengthened in recent years and the budget for the eradication of major animal diseases has increased. Korea has been free of Rinderpest and Foot and Mouth Disease for more than 60 years. None of the Office of International Epizootic List A diseases, with the exception of hog cholera and Newcastle disease, occurred in Korea during 1997 and strict quarantine measures are taken under the authority of the MAF to prevent the introduction of such diseases.

For both plants and animals, government expenditures to prevent pests and diseases through quarantine, prevention, research and information exchange almost doubled from 1995 to 1996 to reach 44 million won. This amount fell to 37 billion won in 1997.

4.4. Infrastructure improvements

Investments for agricultural infrastructure improvements were limited in the past because priority was given to the industrialisation of the economy. In recent years the government has recognised the need to improve agricultural infrastructure and great efforts have been put into land and water development projects including irrigation, drainage, farmland improvement and expansion. Total investment in those projects was around 3 040 billion won in 1997 (Table II.7), which represents a large share of total agricultural expenditures. Almost three-quarters was financed by government subsidies, local government and farmland management funds paying for the remainder.

- Irrigation

Korea is located in a temperate monsoon climate zone. While annual rainfall at 1 274 mm is adequate, two thirds is concentrated in the summer months and there are frequent early or pre-summer droughts when water demand for agriculture reaches a peak. Water management is therefore important for Korean agriculture. Systematic irrigation and drainage improvement projects were initiated with the

Table II.7. **Costs of land and water development projects, 1997**

Billion won

	Total cost	% share
Farmland improvement and expansion projects[1]	2 109.7	69.3
Irrigation projects	623.9	20.5
Large-scale area development	143.6	4.7
Sea dike construction	165.3	5.4
Farmland administration	0.3	0.0
Total	3 042.8	100.0

1. Land consolidation, drainage improvement, tidal land reclamation, etc.
Source : MAF (1998), *Yearbook of agricultural land and water development statistics 1998*, Seoul.

first Five-year Economic Plan in the early 1960s. Since then, there have been continuous efforts to develop and maintain the infrastructure. In recent years, single-purpose irrigation and drainage projects for agriculture have been broadened to include domestic and industrial water following an increase in water demand in rural areas.

The Ministry of Agriculture and Forestry is generally responsible for development and management of water resources, but capital investment costs of projects are shared by central and local government in differing proportions. Irrigation systems are operated and maintained by municipal authorities or the Farmland Improvement Association as described in Section II.B.3.5.

Most irrigation is for rice production. A total of 882 000 hectares or 76 per cent of the total paddy rice area is now irrigated, leaving 24 per cent rain-fed. However, only 35 per cent of the total paddy area is secure from severe drought. There are many difficulties in the operation of irrigation systems as much of the existing installation is old and in need of renewal. In 1997, 54 per cent of reservoirs and 32 per cent of pumping stations were more than 50 and 20 years old respectively. 69 per cent of the irrigation canals are earth canals which leads to considerable leakage and operational difficulties. To try to overcome these problems, which were highlighted by consecutive severe droughts which occurred in 1994 and 1995, the government has decided on a "Ten year Rural Water Development Plan" (1995-2004) with the following objectives:

– to develop irrigation systems in all paddy fields located in the Agricultural Promotion Zones;[30]
– to develop supplementary irrigation in areas susceptible to severe drought;
– to save water and increase the stability of the structure through rehabilitating old irrigation installations;
– to reclaim farmland and increase the amount of good quality farmland through the Large Scale Comprehensive Agricultural Development Projects.[31]

• Drainage

Flooding caused by heavy rainstorms in summer can cause severe damage to crops. To counteract such problems the government has been invested in the construction of drainage facilities such as pumping stations, sluice gates, and canals in areas which are habitually subject to flooding. The projects are usually carried out by the municipal authorities or the Farmland Improvement Associations. Approximately 207 000 hectares of agricultural land are prone to flooding. By 1997, about 39 per cent of the targeted area of 207 000 hectares had been improved and the remainder will be completed by 2010.

• Farmland consolidation

In addition to the small size of farms, the irregular shape of paddy fields, the poor quality of roads and the need to improve irrigation and drainage, fragmentation of holdings is a severe problem in Korean agriculture, acting as a constraint on mechanisation and productivity improvement in general. Farm consolidation has therefore been an important aspect of farm level policy since the 1960s. Through a voluntary process involving the re-arrangement and exchange of plots of land between neighbouring farmers,

a total of 658 000 hectares of paddy fields had been consolidated by 1997. The government objective is to increase the amount of consolidated paddy fields to 800 000 hectares by 2004, a rate of consolidation of 73 per cent. The situation in upland areas is very poor. The government plans to develop 110 000 hectares of uplands for the cultivation of horticultural crops, fruit and vegetables by 2004.

Farmland consolidation projects are usually carried out by the cities, counties or by Farmland Improvement Associations but may be carried out by the Rural Development Corporation, the latter usually when integrated programmes involving irrigation development, drainage improvement and rural village settlement are implemented together. The total cost of farmland consolidation is financed by the government but farmers are not compensated for the land they give up to build farm roads and irrigation systems.

• Land regulation

In addition to the very active role played by government in the consolidation of farm units, the government has also been active in efforts to expand the scale of farm operations. Average farm size in Korea is only 1.3 hectares and although this has been increasing as the rural exodus continues, progress has been very slow (see Section I.C.3. on farm structure). Highly restrictive regulations governing the purchase and transfer of land have been partly responsible for this situation. In recent years, a partial land reform has been implemented (see Annex II) and this combined with an active policy to expand the scale of farm operations in some sectors should result in some improvement of agricultural structures in the years to come.

As a result of the land reform introduced in 1949, the maximum farm size was restricted to 3 hectares and renting or leasing of farm land was prohibited. The restriction on farm size was aimed at an equitable distribution of land based on the economic and technological conditions prevailing at the time but has clearly had a negative effect on efficiency in the sector. Despite legal difficulties informal leasing arrangements have evolved as have contracting mechanisms which allow economies of scale to be achieved in certain production activities in spite of the persistence of very small farms.

The law governing the acquisition, sale, and leasing of agricultural land was revised in 1994 and changes were implemented in 1996. The main change is that the limit on farm size will no longer apply in the Agricultural Promotion Zones.[32] In a further series of changes to land law enacted during 1996, it was made possible for agricultural corporations to own farm land. However, anyone purchasing farmland must work on that land for at least 30 days per year although the requirement to live within 20 kilometres of the farmland location no longer applies.

Agricultural land is scarce in Korea and industrial and urban demand have progressively encroached. Despite efforts to moderate this trend between 16 000 and 17 000 hectares are converted from agricultural use annually. One of the provisions of the legislation for "Farmland Enforcement Regulation" passed in 1997 is that factories in excess of 1 000 square meters or living/recreational facilities in excess of 500 square meters will not be authorised in the Agricultural Promotion Zones.

• Expansion of farm size

In addition to the legal changes affecting land tenure and transfer, the Ministry of Agriculture and Forestry through the RDC is engaged in an active policy to expand the scale of farming in certain areas. In 1997 these operations covered 13 000 hectares and, in total, 87 000 hectares have been covered by the programme since its inception in 1988.

The RDC purchases farmland from non-farmers, retiring farmers, and part-time farmers with holdings of less than 1 hectare and sells the land acquired in this way to full-time farmers or to farming co-operatives. If the land is sold within a year of acquisition the purchasing farmer pays the same price as that paid by the RDC. Loans are made available to purchasers over a 20 year period at 3 per cent below normal commercial interest rates. The RDC also leases land from farmers who are quitting farming to take up other jobs or who are retiring and makes it available to key farmers or to farming co-operatives for periods varying between 3 and 5 years. The RDC also provides a loan service to farmers who return to farming having left it not more than two years previously for a non-agricultural occupation. Finally, low interest

loans can be made available to allow the rearrangement of land ownership with a view to consolidating previously fragmented plots of land. Most of these activities affecting farmland scale are carried out only in the Agricultural Promotion Zones.

4.5. Marketing an distribution

Co-operatives' involvement in the processing, marketing and distribution of domestically produced farm commodities is relatively high in Korea, especially for cereals and livestock products (see Section I.C on agro-food). In particular, they intervene on markets with government support in order to stabilise prices. More generally, the Korean government provides some investment assistance to co-operatives and private firms in the downstream sector to improve their productivity and the quality of the final product. Efforts in this direction have intensified in recent years. They include subsidies and loans to build Rice Processing Centres and support part of their operational costs.

The marketing and distribution channels for food products in Korea are considered to be relatively underdeveloped as are the grading and inspection systems. The Ministry of Agriculture and Forestry is in the process of implementing a series of measures to improve the marketing and inspection systems and related budgetary expenditures have significantly increased since 1992.

– Assistance is given for the provision of storage facilities in production areas. These include collection and delivery centres, refrigerated storehouses and vehicles etc.

– Villages are encouraged to form or expand joint production units with a view to shipping produce jointly to market and thus saving on transport costs.

– Encouragement for the development of public, large scale wholesale markets in big cities and of smaller scale wholesale markets in smaller cities.

– Support for the development of direct distribution channels between producers and consumers.

In addition, the development of standardised production and of reliable grading systems is being developed in order to reduce marketing costs, to improve transparency of transactions along the marketing chain and to enable transactions to occur on the basis of product samples. Increased attention is also being paid to food safety. A compulsory auction system through public wholesale markets, financed by the government, was introduced for major commodities in 1991 and a nation-wide marketing information system for the rapid distribution of transaction information is being established.

5. Measures affecting demand

During the review period 1979-97, the government compensated the NACF and the NLCF for losses incurred while purchasing a number of commodities from farmers at a higher price than what could be obtained on the domestic market. Such expenditures are considered as consumer subsidies paid at the wholesale level as they allow co-operatives to pay a higher price to farmers while maintaining a lower consumer price. They also contribute to price stabilisation and to the maintenance of stocks. Expenditures are financed by the LIDF for milk, beef and veal, and pigmeat; the Agricultural and Fisheries Development Fund and the Special Account for Agro-Fisheries and Rural Structure Improvement for oilseeds and vegetables; and the Food Grain Management Fund and the Special Account for Food Grain Management for cereals. The government has also subsidised the operational costs of co-operatives and other downstream companies by offering them grants and loans at reduced interest rates. In addition, milk processing companies supply free milk to elementary schools with LIDF financing. Overall, such expenditures have ranged between 133 and 317 billion won per year in the 1990s and were 315 billion won in 1997.

6. Sub-national measures

Although there has been a movement towards decentralisation of the implementation of agricultural policies recently, there are no measures financed at the sub-national level in Korea.

7. Tax concessions

Tax concessions are granted to farmers in order to encourage structural adjustment and to stabilise farmers' income. There are concessions on all types of taxation such as property tax on the acquisition and ownership of farmland and agricultural production facilities, transfer tax on inheritance and donation of agricultural capital, income tax on agricultural production and value-added tax on agricultural inputs. Tax concessions added in 1997 include a basic exemption of inheritance taxes for a farmer's heir, the extension of donation tax exemption, and measures to extend value-added tax exemptions to livestock feed.

C. Agri-environmental policies and problems

Impact of agriculture on the environment

The rapid economic development which has occurred in Korea in the post war period has brought with it a number of environmental problems affecting air, soil and water quality. Korea is now tackling these problems and there have been considerable legal and institutional developments during the 1990s. Environmental problems associated with agriculture concern water and to a lesser extent soil quality, and the reclamation of tidelands for agricultural purposes which has threatened certain marine ecosystems.[33]

Korea is one of the heaviest users of chemical fertilisers and of other agricultural chemicals in the world. Although consumption of chemical fertilisers has decreased since 1990 (Annex Table I.8), it is still high relative to most other OECD countries. Use of nitrogenous fertilisers – 231 kilograms per hectare – is exceeded only by the Netherlands. As a result, at 208 kilograms per hectare in 1993-95, nitrogen surplus[34] (*i.e.* net nitrogen moving into the environment) was estimated to be the second highest after the Netherlands (OECD Agri-environmental Indicators in OECD, 1998*c*). In addition, livestock production has been increasing rapidly with resulting appreciable increases in effluent discharges. Animal waste was estimated at 43 million tonnes in 1995. Use of agricultural chemicals other than nitrogen (*e.g.* pesticides) is also extremely high (in 1995, Korea used close to 26 000 tonnes of active ingredients). The concentration of total nitrogen and phosphorus has increased strikingly in many rivers in the 1990s and eutrophication is a problem in many lakes. Nitrate levels are high in urban and agricultural areas. Overall, the ambient water quality in Korea is subject to heavy pressure from municipal, industrial and agricultural effluents and all these sectors are having to pay a lot more attention to the way in which they use this scarce resource. Moreover, the rice cultivation system is heavily dependent on irrigation and drainage, but the infrastructure is relatively old in many cases and water losses are significant. Agriculture accounts for 63 per cent of annual water withdrawal, a very high share by OECD standards.[35]

The main agricultural impact on soil quality has been identified as the despoiling of fields by empty pesticide bottles, wasted vinyl and abandoned agricultural machinery. In addition, because it uses pesticides intensively, agriculture is likely to have contributed to soil pollution by phosphorus and heavy metals[36] although, according to Korean authorities, industrial activities are the main source. Non-agricultural sources of soil contamination include fall-out from the atmosphere and leaching from waste dumps and mines. The problems caused by heavy metal contamination in soil have resulted in dangers for plants, animal and human health, in addition to which heavy metals carried in run-off sediments or leached from soil can contribute to the loading on surface waters or contaminate groundwater resources.

Agriculture contributes to CO_2 emissions but is far from being the major source – 22 per cent comes from the agriculture and residential/commercial sectors combined.

Finally, because of the scarcity of agricultural land and the high priority given to food self- sufficiency as way of securing food security, Korea has been engaged for some time in an extensive programme to reclaim tidelands (flatlands subject to submersion at high tide). Already more than 129 000 hectares have been or are in the process of being reclaimed. However, the recent realisation that reclamation was threatening the value of these areas as nurseries for fish life has led to a number of projects being shelved, saving valuable habitat for estuarine species.

There are also benefits to the environment from the preservation and development of agricultural production. RDA researchers estimated the positive environmental benefits of the paddy fields to have been 13.4 trillion won.[37] These benefits occur through flood prevention, erosion prevention, the absorption of CO2 and the preservation of groundwater. Dry fields also bring the same type of benefits, in addition to which they absorb large volumes of waste materials. The value of these benefits has been estimated at 5.5 trillion won. Agriculture also contributes positively to maintaining certain ecosystems and providing recreational facilities and to the preservation of traditional culture.[38] However, no attempt has been made to measure the negative environmental externalities of agriculture.

Policy responses

In response to the growing awareness of environmental problems arising from agriculture, the Ministry of Agriculture and Forestry launched its "Environmental Policy in Agriculture, Forestry and Fisheries for the 21st. Century" initiative in July 1996. The main emphasis of the new policy is on the reduction of pollution and other environmentally harmful effects from agriculture, the conservation and improvement of the agri-environment and the encouragement of environmentally friendly farming systems, such as organic farming. Specific targets have been set for developing technologies to reduce pesticide use by 50 per cent by 2004 and chemical fertiliser use by 40 per cent over the same period. The former is to be achieved by the introduction of integrated pest management systems, the development of pesticides with low toxicity levels and the establishment of safety guidelines for pesticide use. The reduction in the use of chemical fertilisers is to be brought about by careful planning of fertiliser use in accordance with the soil characteristics of each farm and developing and supplying slow release fertilisers. Nevertheless, fertiliser use is still subsidised, although to a lesser extent than in the past. It is intended to develop the use of organic fertilisers derived from animal and food waste, to expand facilities for the disposal of animal waste and to construct facilities for the disposal of contaminated sewage in rural areas. Thirteen facilities to treat abandoned machinery have been built as well as facilities to treat pesticide containers and vinyl waste.

Soil quality is to be improved and heavy metal contamination reduced by the addition of "soil conditioners" such as lime and silicated fertilisers and favourable loans are granted to farmers for the transportation of soil. It is also planned to develop the monitoring of water quality. Special incentives will be given for the development of organic farming – 250 billion won for small and medium size farms and about 62 billion won for organic farmers in "water preserving areas". There are 385 areas set by the Ministry of the Environment, covering 1 176 km^2 in which the use of chemicals and animal waste is restricted in order to preserve the quality of drinking water. Attention will be paid to the marketing of organic products, the certification system will be developed and the network of special shops selling organic produce will be expanded. These initiatives reflect the recognition of increasing consumer demand for safe agricultural products with low levels of residues.

D. Rural development policy

Rapid economic development based on industrialisation and urbanisation has been to the detriment of development in rural areas. Investment in infrastructure and in industrial facilities has been concentrated in urban areas and the rural population has fallen sharply as the economy transformed itself from an essentially agrarian to an industrial one in a single generation. Korea now finds itself with a rural infrastructure the quality of which lags far behind that of urban areas. The weakness in the rural infrastructure and economy covers all aspects of rural life from housing and sanitary facilities to transport, education and health services. In recognition of this as well as reflecting a growing understanding of the social costs brought about by the density of urbanisation, the emphasis in policy has been turning towards rural development as a means of redressing these imbalances. The Ministry of Agriculture and Forestry is primarily responsible for rural development although other ministries and agencies, including local governments, are also involved.

The concept of rural development, which originally focused on land and water development such as irrigation, drainage and land consolidation, has now been widened to include the improvement of rural

living standards in general through the provision of modern housing, off-farm employment and the improvement of rural infrastructure and services. The umbrella policy framework was set in 1989 with the "Comprehensive Plan for Rural Areas Development" which established the Rural Development Act. Major projects for rural development are the following:

- The Rural Settlement Area Development Project aims to improve rural living standards, infrastructure and public services. It is planned to improve 772 Sub-Counties by 2004.
- The Advanced Village Project which aims to create modern residential complexes in 281 existing rural villages by 2004.
- The Rural Sewage Treatment Project which aims to prevent water pollution by establishing sewage treatment facilities is complementary to the Advanced Village Project and has been operating since 1994.
- The Rural Domestic Water Development Project which aims to supply drinking water by sinking deep wells in rural villages which have to date been dependent on water from small streams subject to pollution. It is planned to develop 5 000 units by 2004.
- The Off-farm Income Development Project which aims to assist farmers to generate additional income by developing farm tourism and recreational facilities and by establishing rural industrial complexes. By 1997 292 rural industrial complexes and 601 tourist farms or recreation complexes had been created.

There are many more projects aimed at improving living standards in rural areas and which range from road improvement to enable rural residents to travel more easily to work in urban areas, to educational, cultural and health initiatives. Many of these are implemented by Ministries other than agriculture including Home Affairs, Health and Welfare and Construction and Transportation.

E. Regulatory reform affecting agriculture, 1993-1997

Regulatory reform, in general, has become an important feature of economic policy in Korea as government has sought ways in which to improve productivity and efficiency and thus maintain the very rapid rates of growth that have characterised the Korean economy since the 1960s. While it is obvious that many areas of economic activity require regulation this should be as rational and transparent as possible. In order to improve the quality of regulation in the economy, the following criteria or guidelines have been set in Korea:

- regulations that are not based on laws should be abolished;
- the specific terms of any regulation should be contained in a Ministerial or higher decree;
- unclear terminology should be clarified or deleted;
- unwarranted inspections where the requirement is only for declaration should be abolished; and
- concrete criteria should form the basis of the decisions of committees involved in regulatory matters

The specific task of regulatory reform was entrusted to "The Committee on the Reform of Economic Regulation" which was set up under the auspices of the Korea Fair Trade Commission and the Committee on Administrative Innovation, the latter established as a direct advisory committee to the President. Information collected through these organisms and through the centres set up by the NACF to allow farmers to express their dissatisfaction with the regulatory environment resulted in the identification of 438 areas in which the quality of regulation could be improved. Of these, about 408 areas, prescribed in 82 Acts and/or Regulations, have been selected for attention with a view to improving transparency and efficiency along the lines of the criteria described above. To date, this has resulted in changes in regulations governing the acquisition and use of farmland, the administration of rice policy, licensing, testing and inspection of agricultural inputs such as seeds, fertiliser, chemicals and machinery, marketing of agricultural commodities, permissible types of greenhouses, the dairy and animal feed sectors, food shelf life and plant protection. Many of the changes have been described in summary terms in the relevant sections of this report. A detailed account is given in Annex II.

NOTES

1. In this report, the term "trade liberalisation" means the removal of quantitative restrictions on imports.
2. The Special Account was re-established to absorb and enlarge the Agriculture and Fisheries Development Fund.
3. This relates to measures to improve streets, transportation, medical services, the provision of water, the environment, to expand rural education, to reduce the burden of educational expenses, as well as the introduction of a pension system.
4. The main aspects of the Comprehensive Programme for Rice Industry Promotion were to:
   – egulate the conversion of farmland to other uses in Agricultural Promotion Zones;
   – increase investment in agricultural infrastructure projects such as land consolidation, irrigation and drainage;
   – foster full-time farmers;
   – improve farm mechanisation and the scale of farming operations in order to reduce production costs;
   – build Rice Processing Complexes to facilitate marketing; and
   – encourage direct contracts between farmers and private processors.
5. The main characteristics of the programme are to:
   – encourage cattle breeding with the objective to produce 750-800 000 calves per year and to maintain the herd size at 2.5-2.6 million heads;
   – introduce a payment to beef producers, up to 100 000 won per head, if the price of calves drops below a threshold price;
   – build Livestock Processing Complexes to facilitate processing and marketing;
   – encourage the production of high quality meat through promotion of brands and strict grading; and
   – intensify sanitary inspection for residues in slaughterhouses.
6. Native beef cattle.
7. The Dairy Industry Plan includes:
   – a payment of 100 000 won per dairy cow slaughtered between May 25 and August 31;
   – raising the penalty on grade C milk from 30 to 60 won per kilogram to enhance milk quality;
   – stabilising price and supply of milk through the Dairy Promotion Association which groups milk processors and producers' co-operatives;
   – improving the collecting system; and
   – introducing a milk inspection system by local governments.
8. In August 1996 the Ministry of Agriculture, Fisheries and Forestry (MAFF) became the Ministry of Agriculture and Forestry (MAF) as the Fisheries Administration merged with the Maritime and Port Administration to become an independent Ministry of Maritime Affairs and Fisheries. Agricultural Trade Policy remains the responsibility of the MAF.
9. From the 1997 Annual Report of the NACF.
10. From the 1997 Annual Report of the NLCF.
11. The major stabilisation schemes currently in place are the Food Grain Management Programme, financed via the Food Grain Management Fund, replaced by the Special Account for Food Grain Management in 1994; the Livestock Price Support Programme; the Sericulture Price Stabilisation and Promotion Programme; and, for products other than food grains, livestock and silk, the Buffer Stock Management Programme.
12. Tong-il rice is a cross between indica and japonica parent lines.
13. Purchase prices for rice and barley were fixed at high levels from 1968. A dual price system with resale prices lower than purchase prices was instituted the following year.

14. The Grain Marketing Committee is an advisory body to the MAF. The major function of the committee is to make recommendations on *i)* purchase price and quantity of grains and *ii)* improvement of grain marketing and other issues suggested by the MAF. The Committee is composed of 20 members representing producers (5), consumers (5), academics (4), government-financed research institutes (2), the rice marketing industry (2) and newspapers agencies (2). Based on the Committee's recommendations, the government makes proposals to the National Assembly. This process is described in Yoon, Hoseop (1993).
15. The United States exported agricultural products to Korea through the Agricultural Trade Development and Assistance Act of 1954, the so-called PL480, until 1978.
16. These figures correspond to calendar years and are different from those reported in Annex Table II.3, which correspond to marketing years.
17. The AMS for rice is calculated as the purchased quantity multiplied by the difference between the purchase price and a fixed world reference price.
18. This status, granted during the Uruguay Round, could be challenged in the future.
19. Under a previous agreement signed in 1989 and to be implemented by 1997, Korea eliminated import restrictions that had been sanctioned on Balance of Payment grounds for 220 agricultural and fisheries products. Restrictions on 73 additional items were removed in July 1997 while liberalisation of the remaining items, eight categories of beef and cattle, was postponed under the Uruguay Round negotiations to January 2001.
20. In its country schedule, Korea used the base period 1988-90 rather than 1986-88 used by other countries to reflect changes in domestic price and import quantities from 1986 to 1994.
21. The mark-up is calculated as the pool price minus the unit value of imports plus handling costs.
22. Three million tonnes in 1996 and 3.3 million tonnes in 1997.
23. Management costs are defined as production costs minus land service costs, capital service costs and the farmer's own labour cost.
24. MAF, Fruit and Vegetable Division.
25. Since 1993, a Simultaneous Buy/Sell quota system has operated by which a representative of particular users of beef such as tourist hotels and restaurants acts on behalf of its members to co-ordinate beef imports and negotiate prices between the end users and suppliers. Such imports occur outside the LPMO system.
26. There are livestock co-operatives outside the NLCF, specialised in pork, chicken, milk, etc. Pig producers' co-operatives generally group farmers with over 200 animals.
27. Such loans have been provided under the Future Farmer Development Programme since 1981.
28. Within the Large-Scale Development Programme implemented in 1992, which aims at promoting large-scale mechanised farms, loans were made available to farmers to buy land and machinery.
29. From 1996 farmers may borrow up to 20 million won of which 10 million may be without a personal credit guarantee.
30. Agricultural Promotion Zones are areas, covering 54 per cent of total farmland at the end of 1996, designated for special agricultural development by the provincial governor under the Farmland Act. In particular, agricultural land in these areas can not be diverted to other uses.
31. Those projects include irrigation development, drainage improvement, farmland consolidation, building estuary dikes and tideland reclamation in the large plain areas centering around large river systems. The first project was initiated in 1972. The 14 projects completed in 1996 covered 141 000 hectares and eight projects covering 125 000 hectares are on-going and planned to be completed by 2004.
32. See note 30.
33. The source of the following Sections is OECD (1997), *Environmental Performance Review of Korea, Main Report* and OECD (1995), *Sustainable Agriculture: Concepts, Issues and Policies in OECD Countries*, Paris.
34. Nitrogen (N) surplus measures the difference between the quantity of N inputs into agricultural soil (mainly chemical fertilisers, livestock manure, atmospheric N deposition, biological N fixation) and the N uptake from the soil (from arable and permanent crops, and pasture) divided by the total agricultural land area, expressed as N kg/ha.
35. In the early 1990s, irrigation accounted for more than half of total freshwater abstraction in the following OECD countries for which data were available: Turkey (84 per cent), Japan (64 per cent), Spain (55 per cent), New Zealand (55 per cent) and Portugal (53 per cent). For most other OECD countries, this proportion is lower than 15 per cent, one notable exception being the United States with 40 per cent of water used for irrigation (OECD Environmental Data 1995).

36. Agricultural activities add heavy metals to the soil through the application of artificial fertilisers, (due to the presence of metals in the source phosphate-carrying rock used in its manufacture), through the application of manure (due to the presence of growth stimulators in the feed), sewage sludge, pesticides, (some of which contain arsenic for example) or through irrigation water.
37. EOM, K.C. *et al*. (1993), "Public Benefits from Paddy Soil", *Journal of Korean Society of Soil Science and Fertilisers*, Vol. 26(4), pp. 314-333; OH, S.I. et al. (1995), "Study on the Environmental Preservation of Rice Farming", KREI Research Study R321, pp. 40-43.
38. MAF, Agricultural Production Policy Bureau.

Chapter III

ANALYSIS OF SUPPORT TO AGRICULTURE, 1979-97

Chapter II reviewed the main agricultural policy objectives and support measures in Korea. This chapter discusses the support measures in terms of quantitative estimates of the transfers to producers from consumers and taxpayers that result. For this purpose, the key indicators are the **Producer Subsidy Equivalent (PSE)** and the **Consumer Subsidy Equivalent (CSE),** their components and derivatives. The definitions and methodology for the calculation of the PSE/CSE indicators have already been presented in detail in a number of OECD publications. However, Annex III of this report recalls briefly the PSE/CSE concepts and discusses some aspects specific to their use in the case of Korean agricultural policy. Details of the calculation of PSE/CSE for each commodity studied and of the sources and definitions of the data used are also presented in Annex III.

The standard list of commodities for which PSEs and CSEs are usually calculated for OECD countries consists of: wheat, maize, other grains (barley, oats and sorghum), rice, oilseeds (soybeans, rapeseed, sunflower), sugar, milk, beef and veal, pigmeat, poultrymeat, sheepmeat, wool and eggs. For an individual country, the choice of commodities from the standard list depends on whether production of that commodity exceeds 1 per cent of the value of total agricultural production. On that basis, among crop commodities, only barley, rice and soybeans have been considered in the Korean PSE because wheat, maize, oats, sorghum, rapeseed, sunflower and sugar each represent less than 1 per cent of the total value of production. For the same reason, sheepmeat and wool are excluded from the Korean PSE. The only poultrymeat considered is chicken. Over the review period, the PSE commodities have accounted, on average, for 61 per cent of the total value of agricultural production – almost all the value of total livestock production in Korea (95 per cent), but only half of crop production. While the share of livestock production covered by the PSEs has been relatively stable over the period, the proportion of crop production has decreased from 55 to 43 per cent.

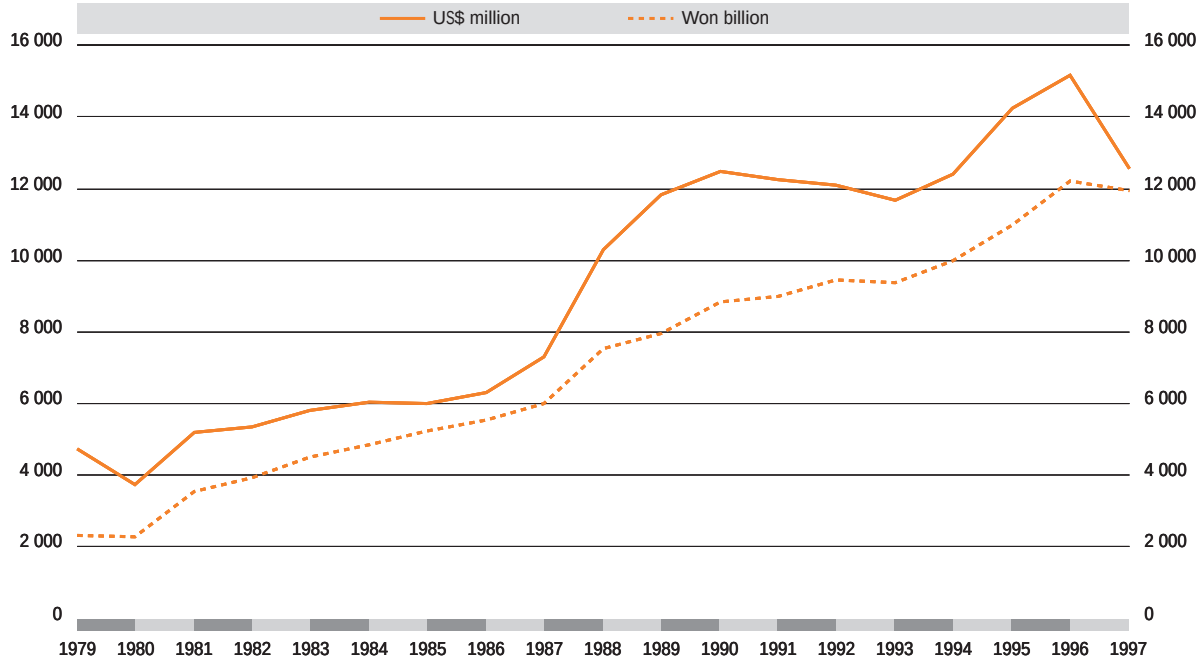
A. Aggregate results

1. Evolution of total support

Graph III.1 shows the evolution of the **net total PSE** over the 18 year review period from 1979 to 1997. It is difficult to analyse the evolution of the net total PSE without taking into account inflation and exchange rate movements. However, annual increases in total PSE were higher than inflation as measured by the GDP deflator from 1981 to 1990 and from 1994 to 1996. In both 1995 and 1996, total PSE increased by more than 10 per cent, significantly above the inflation rate. However, the trend was reversed in 1997 when the total PSE fell. As shown in Annex Table III.1, total PSE has increased at a slightly higher pace than inflation on average during the period 1986-88 to 1997.

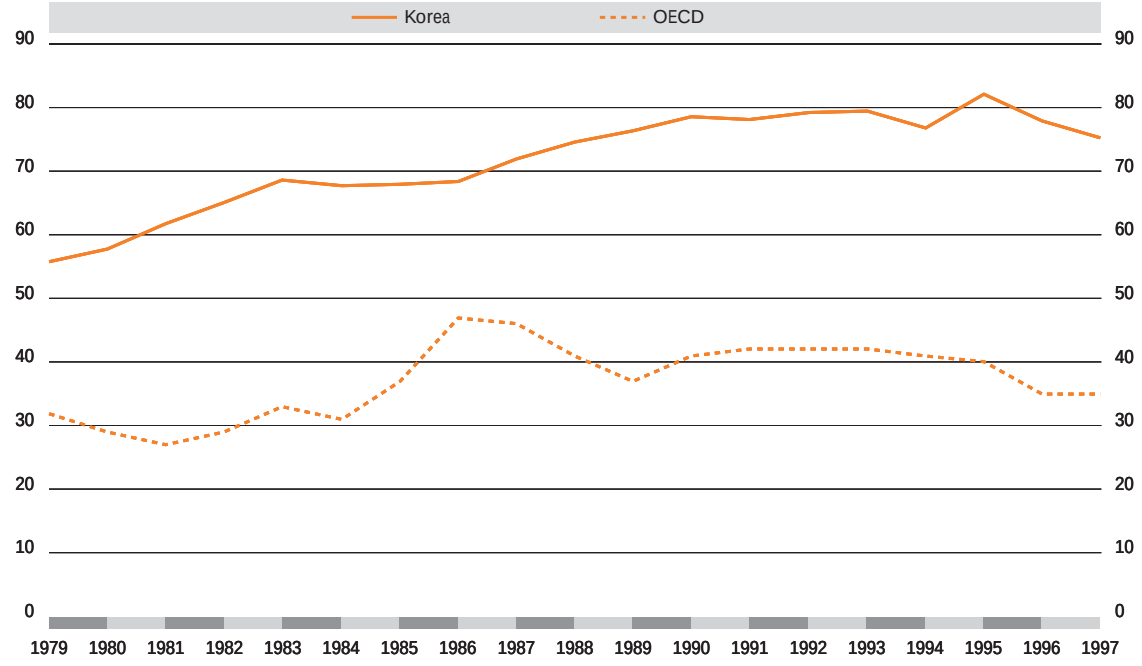
The **net percentage PSE,** which expresses the PSE transfers as a percentage of the value of production, is a more appropriate measurement of support over time and across commodities. The evolution of the net percentage PSE has been upward for most of the period 1979-97 but fell in 1996 and 1997 (Graph III.2)). From less than 60 per cent at the beginning of the period, it rose to around 70 per cent between 1983 and 1987 and since 1990 has been close to 80 per cent. A peak was reached in 1995 at 82 per cent, followed by a fall to 78 per cent in 1996 and to 75 per cent in 1997. This record

✦ Graph III.1. ***Net total PSE in Korea, 1979-97***



Source: Annex Table 13, Annex III.

✦ Graph III.2. ***Percentage PSE in Korea and in the OECD area, 1979-97***



Note: The Czech Republic, Hungary, Mexico, Poland and Korea are not included in the OECD average.
Source: Annex Table 13, Annex III.

mainly reflects movements in the rice PSE which accounts for between two-third and three-quarters of total PSE over the period (see Section III.B.d). However, the 1997 fall reflects a lower percentage PSE for livestock products. The percentage PSE for Korea was more than double the OECD average at the end of the period. The percentage PSE for crops has been consistently higher than the percentage PSE for livestock commodities. The difference, which was small at the beginning of the period, has increased over time and is now more than 40 percentage points.

In general, changes in **producer Nominal Assistance Coefficients (NACs)** have followed the evolution of the percentage PSE. The producer NAC increased from 2.3 on average in 1979-81 to an average of 3.3 in 1986-88 and rose again to reach 4 at the beginning of the 1990s. It fell in 1994, reached a record 4.2 in 1995 and fell again to 3.2 in 1997. The producer NAC for crops has been much higher than for livestock products, the gap widening at the end of the period. In 1997, the highest producer NAC – at 6.4 – was for oilseeds (in fact, soybeans, see Section III.B.e).

The changes in support to agriculture are essentially the result of variations in the gap between world prices and domestic prices, as measured by market price support and are reflected in the evolution of transfers from consumers to producers which are the main component of the **total CSE.** The **percentage CSE** for all commodities has followed the fluctuations of the percentage PSE but is significantly lower, and the gap between the two indicators has been increasing towards the end of the review period (Graph III.3). Starting from around 50 per cent, the percentage CSE rose to 60 per cent on average in 1986-88, then to 65 per cent in 1990 and fell back to 53 per cent in 1997. The gap between the PSE and the CSE occurs mainly for crops and can be explained by three factors. Firstly, CSEs are calculated for wheat, maize and sugar in addition to crops covered by PSEs (barley, rice and soybeans) and the level of support for those additional commodities is significantly lower. Secondly, a large and increasing proportion of domestic consumption of maize and soybeans is imported and these imports are subject to a low level of border protection. The resulting implicit tax on consumers is significantly lower per tonne than the market price support that is accorded to producers. Thirdly, subsidies given at the wholesale level reduce CSEs. In the case of rice, these subsidies have increased in recent years. The percentage CSE for livestock commodities is relatively closely aligned with the percentage PSE although, as for crops, the gap widens towards the end of the review period as government expenditures on research, capital grants and interest concessions, and in some cases wholesale subsidies, have become more important in the PSE.

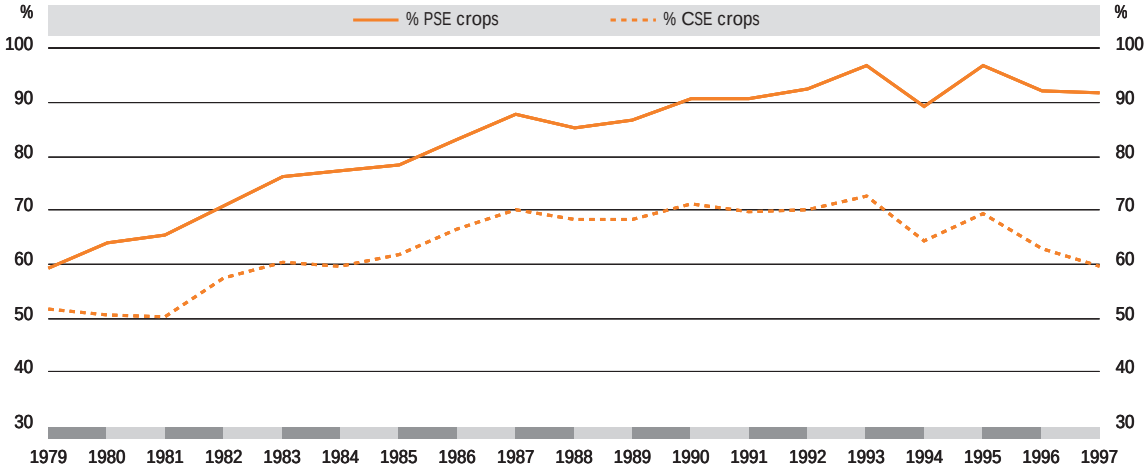
In general, changes in **consumer Nominal Assistance Coefficients (NACs)** have followed the evolution of the percentage CSE. The consumer NAC increased from 2.0 on average in 1979-81 to 2.5 in 1986-88. A peak of 2.9 was reached in the early 1990s and it fell back to 2.2 in 1997. As for CSEs, the level of consumer NACs is much lower than that of producer NACs throughout the review period. Consumer NACs for crops are higher than consumer NACs for livestock but the difference is less pronounced than in the case of producer NACs. For most years, the highest consumer NAC is that of rice. It reached a peak of 9 in 1993 but had fallen to less than 5 in 1997 due to world price movements (See Section III.B.d).

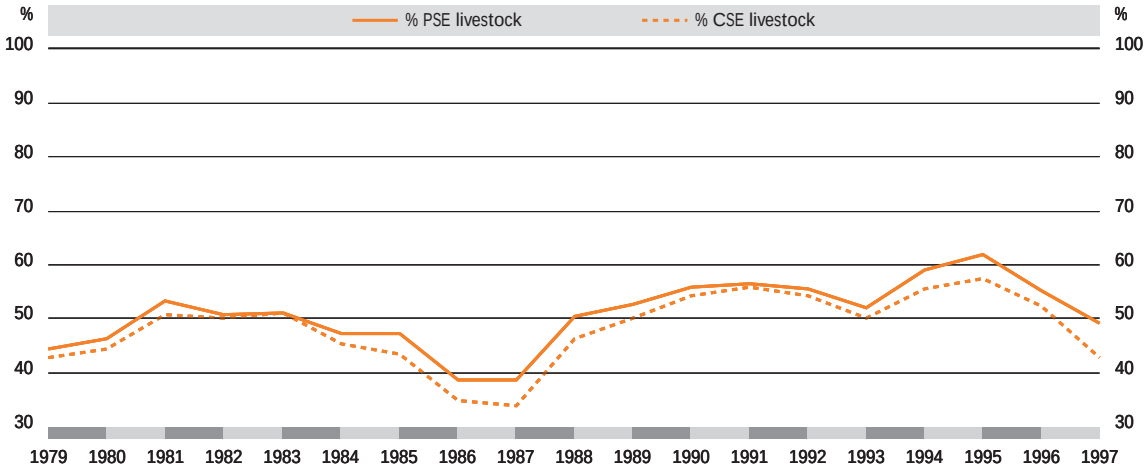
2. Evolution of support components

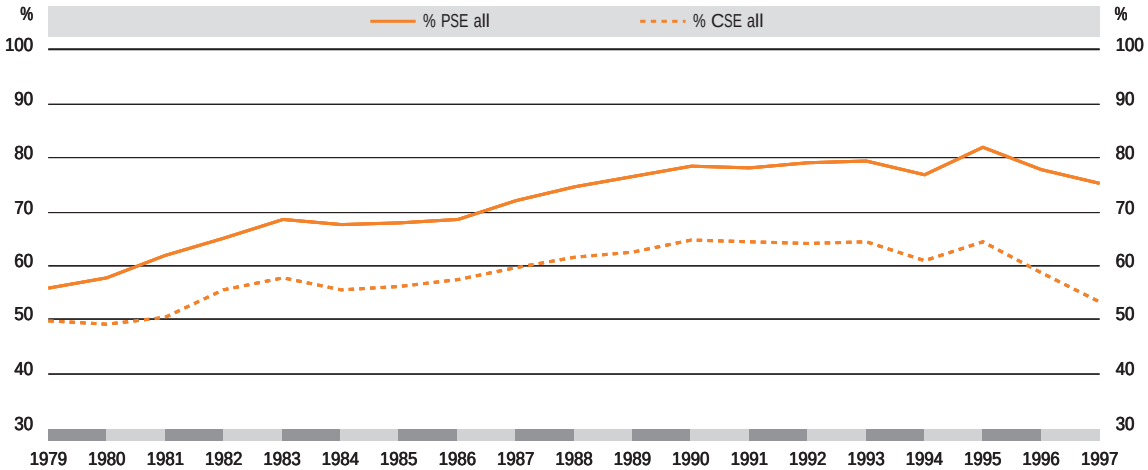
2.1. Decomposition of PSE over the review period

Graph III.4 shows the share of the main support components in the net total PSE for the period 1986-88 and for 1997. **Market price support** is by far the main element of support all through the review period. Its share in the net total PSE was around 95 per cent at the beginning of the period and up to 1989 but it has fallen since that date – to 85 per cent in 1997. **Direct payments** are negligible accounting for only 1 per cent of the net PSE at the end of the period. The share of the **reduction of input costs** in net total PSE rose from a non significant level at the outset to 4 per cent at the end of the period. While capital grants and interest concessions on loans have generally accounted for a significant share of this support component, expenditures on irrigation have become important in the 1990s. The share of

✦ Graph III.3. ***Percentage PSE and CSE in Korea for crop and livestock commodities, 1979-97***

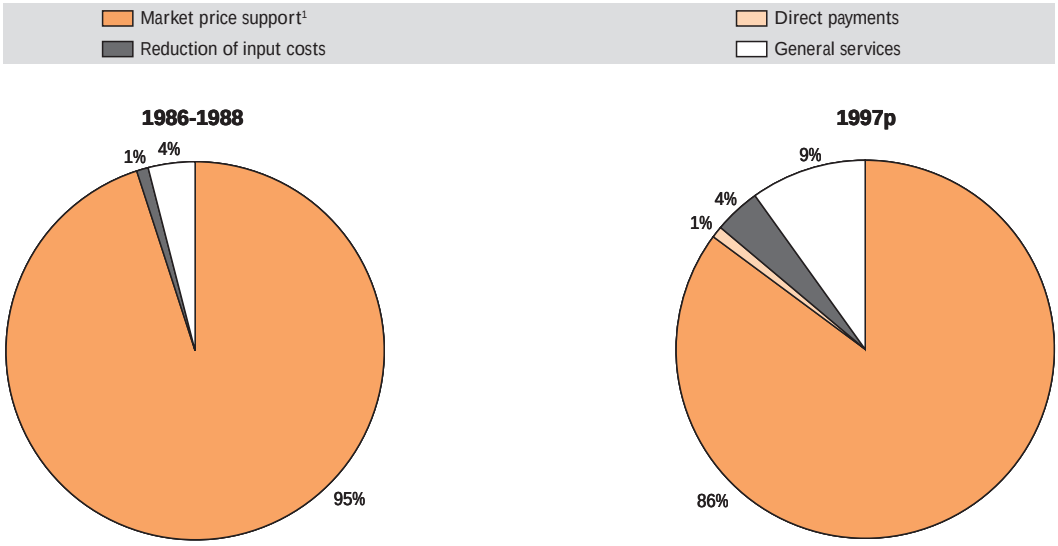






Source: Annex Tables 15 and 16, Annex III.

◆ Graph III.4. ***Breakdown of total PSE in Korea, by type of support measure***



p: provisional.
1. Net of producer levies and feed adjustment.
Source: Annex Table 13, Annex III.

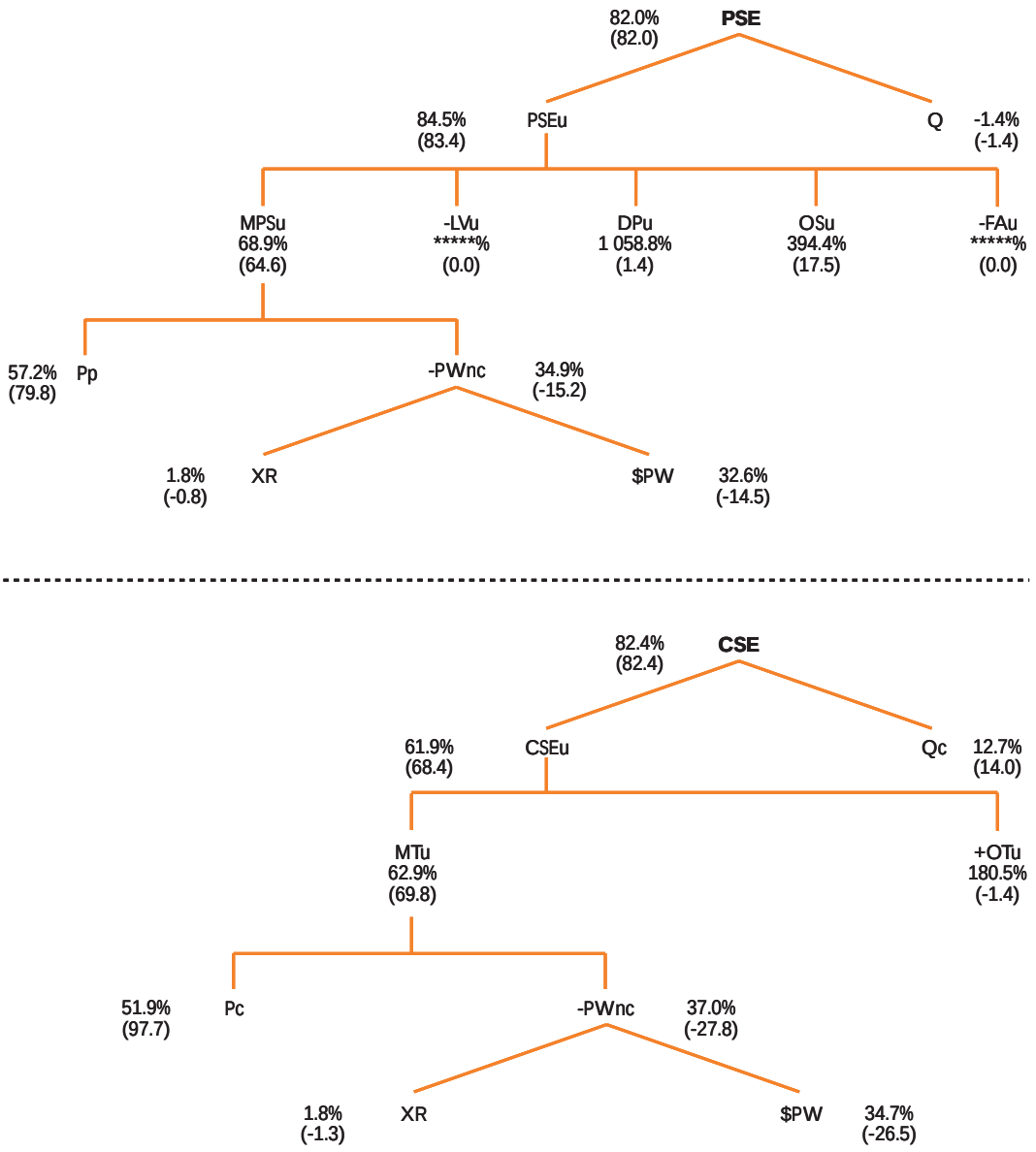
general services in net total support also increased from 4 per cent during most of the period to 6 per cent in 1995 and 10 per cent in 1997. The improvement of agricultural structures and infrastructures (essentially land rearrangement and irrigation schemes) constitute the main elements of support to general services and these expenditures benefit crops exclusively. In the case of livestock commodities, capital grants and interest concessions dominate expenditures on reduction of input costs and research is the main item in general services.

2.2. Decomposition of PSE and CSE changes

The decomposition of the **Total PSE** and **Total CSE** helps to identify the relative importance of changes in the various PSE and CSE components and the parameters that determine them in explaining the overall year-to-year changes in PSEs and CSEs. The decomposition analysis is presented in a graphical form using a "tree diagram" to illustrate the contribution of changes in each component of support, and the overall yearly change in support. The upper value shown for each component is its annual percentage change as measured by the Fisher ideal index. The lower value in brackets is the approximate contribution to the total change (*i.e.* the effect on the total PSE or total CSE of the change in the component, on the assumption that no other change had taken place) (see Annex III for details).

The increase in total PSE between 1986-88 and 1995-97 was entirely due to a rise in the unit PSE and took place while production decreased (Graph III.5.*a*). All components of the PSE contributed to this increase but because of its importance, unit market price support was the major factor. The rise in unit market price support during this period can be explained by a greater increase in producer prices than in world prices. In the case of the CSE, the rise in the unit market price support leading to a higher unit CSE was combined with a significant increase in consumption.

✦ Graph III.5a. ***Decomposition of PSE and CSE changes from 1986-88 to 1995-97***

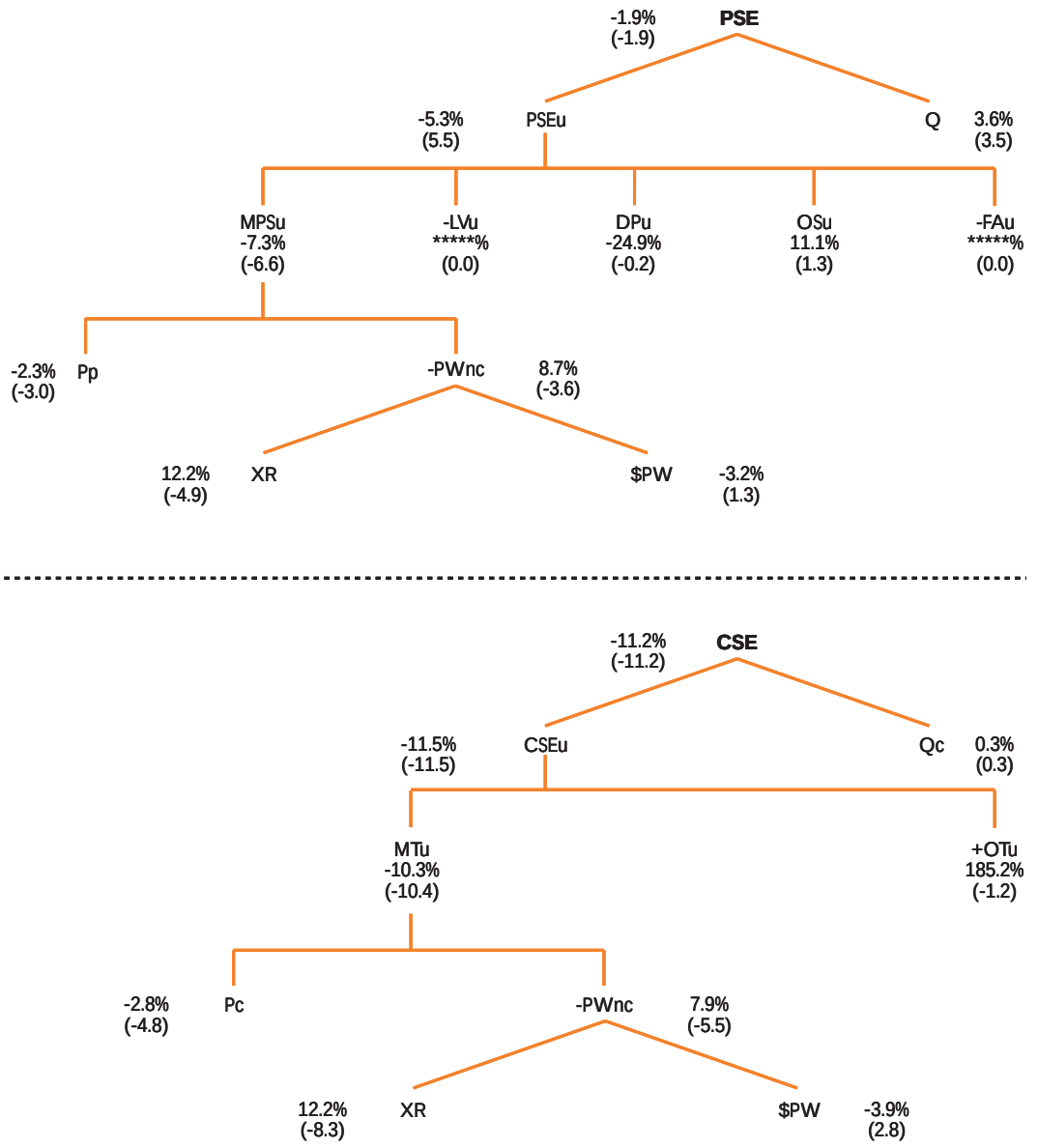


PSE	: net total PSE	**MPS**	: market price support	**u**	: per unit
CSE	: net total CSE	**MT**	: market transfers	**nc**	: in national currency
Q	: quantity produced	**LV**	: levies on output	**$**	: in US$
Qc	: quantity consumed	**DP**	: direct payments	**...%**	: percentage change
Pp	: production price	**FA**	: feed adjustment	**(...)**	: contribution to total change in PSE and CSE in percentage points
Pc	: consumption price	**OS**	: other support		
PW	: world price	**OT**	: other transfers		
XR	: exchange rate/US$			*******	: not applicable

1. For an explanation of decomposition, see Annex III.

Source: OECD Secretariat, 1998.

✦ Graph III.5*b*. ***Decomposition of PSE and CSE changes from 1996 to 1997***



PSE	: net total PSE	**MPS**	: market price support	**u**	: per unit
CSE	: net total CSE	**MT**	: market transfers	**nc**	: in national currency
Q	: quantity produced	**LV**	: levies on output	**$**	: in US$
Qc	: quantity consumed	**DP**	: direct payments	**...%**	: percentage change
Pp	: production price	**FA**	: feed adjustment	**(...)**	: contribution to total change in PSE or CSE in percentage points
Pc	: consumption price	**OS**	: other support		
PW	: world price	**OT**	: other transfers		
XR	: exchange rate/US$			*******	: not applicable

1. For an explanation of decomposition, see Annex III.

Source: OECD Secretariat, 1998.

The net total PSE decreased by 2 per cent between 1996 and 1997 as the 5 per cent decline in the unit PSE was partially offset by a 4 per cent rise in production (Graph III.5.*b* The fall in the unit PSE was due largely to a 7 per cent decline in unit market price support that was not entirely offset by a 11 per cent increase in other support. This result reflects the importance of market price support in total PSE. The reduction in unit market price support was the result of an increase in world prices, both in won and US$, combined with a reduction in domestic prices.

In 1997 the total CSE fell by 11 per cent. This movement reflected a decrease in the unit CSE attributable to a 10 per cent fall in unit market transfers combined with a in other transfers which are positive. As for market price support, the decline in unit market transfers was the result of an increase in world prices, both in won and US$, combined with a reduction in domestic prices.

3. Evolution of total transfers

During the review period, **total transfers** in won were about twice the value of the total PSE. This is due mainly to the fact that the PSE, which is calculated for only around 60 per cent of total agricultural production, is extrapolated to cover all agricultural production for the total transfers calculation (Annex Table III.2). As for PSEs, it is difficult to analyse the evolution of total transfers in current won during such a long period, but annual increases in total transfers have been higher than changes in GDP deflator between 1981 and 1990 (except in 1983), i1994 and 1995. In addition, total transfers expressed in won and in US$ have increased at a higher rate than the GDP deflator and the total PSE from 1986-88 to 1995. In 1996, total transfers slightly decreased. In 1997 there was a more pronounced fall – 4 per cent in won, and 18 per cent in US$ (Annex Table III.1).

Total transfers as a share of GDP have declined steadily over the period, from 15 per cent in 1979 to 5 per cent in 1997 (Graph III.6). The evolution of the share of agriculture in GDP has been similar, falling from 15 per cent in 1979 to 5 per cent 1997, as the economy developed. In fact, total transfers as a share of agricultural GDP have risen during the review period. The average share of total transfers in GDP for the OECD as a whole was about 1.3 per cent in 1997, with only Turkey being close to the Korean level (Graph III.7). In 1997, **total transfers per capita,** at an average level of US$517, were almost double the OECD average of US$312 (Graph III.7) and about the level observed in Iceland and Japan. The only level of total transfers per capita were Norway and Switzerland.

B. Analysis of support by commodity

This section analyses in more detail the evolution of support by commodity as measured by the PSE and CSE. For comparison, Graph III.8 and III.9 present the percentage PSE and percentage CSE by commodity for Korea and the OECD as a whole for the period 1986-8 and for 1997. Graph III.10 and III.11 present the producer NAC and consumer NAC by commodity for Korea and the OECD for the same periods.

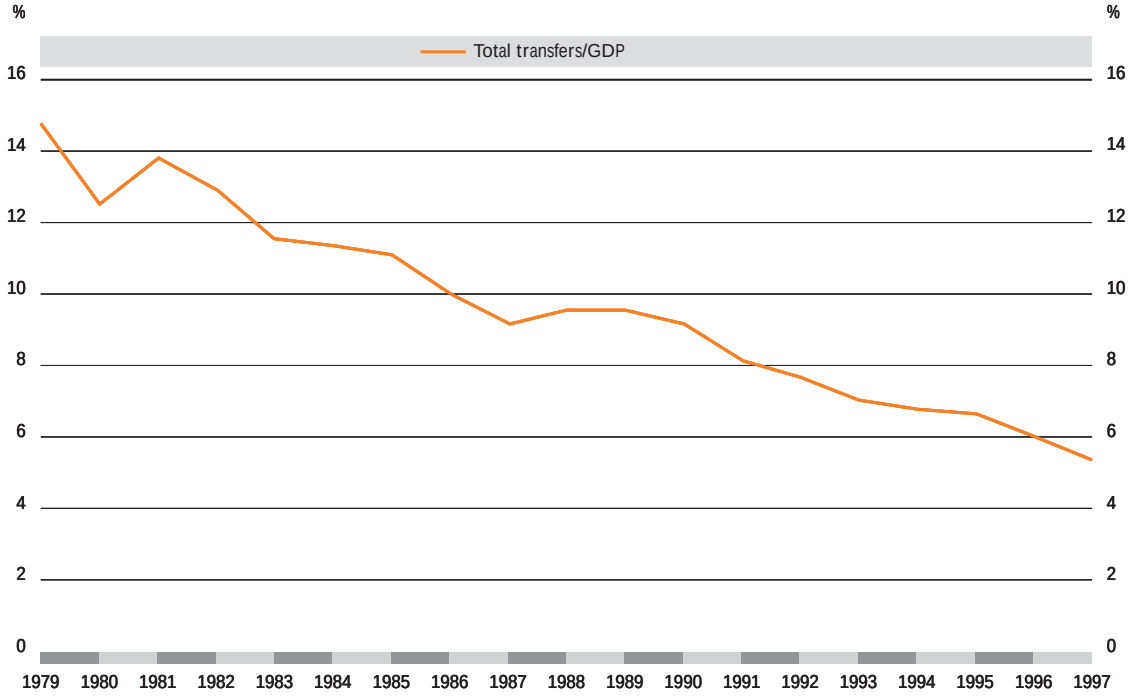
a) Wheat (Table 1 – Annex III

Wheat production has been very small throughout the review period and, since 1984, when border protection and domestic support were lowered, it has been negligible. Therefore, no PSE is calculated for wheat. Wheat consumption was around 3 million tonnes in 1995, 1996 and 1997. The CSE for wheat, which results from import tariffs, has been very low during the whole period (3 per cent between 1988 and 1995 and 1 per cent since 1996) and the consumer NAC is 1, indicating that consumer prices are closely aligned with world prices. CSE for wheat arises from import tariffs, which in recent years have been at 3 per cent or less.

b) Maize (Table 2A – Annex III))

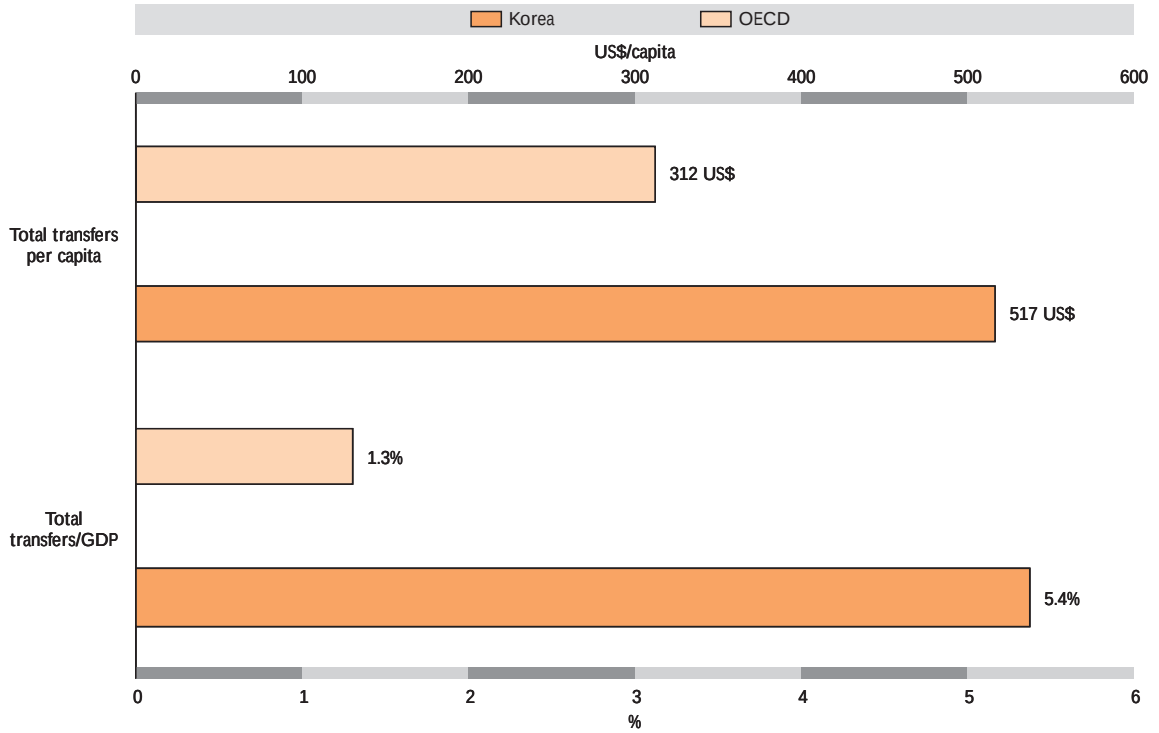
Although more significant than wheat production, maize production represents less than one per cent of the total value of Korean agricultural production and no PSE is calculated. On the other hand, maize consumption has increased steadily over the period to reach 8-9 million tonnes

✦ Graph III.6. ***Total transfers in Korea as a percentage of GDP, 1979-97***



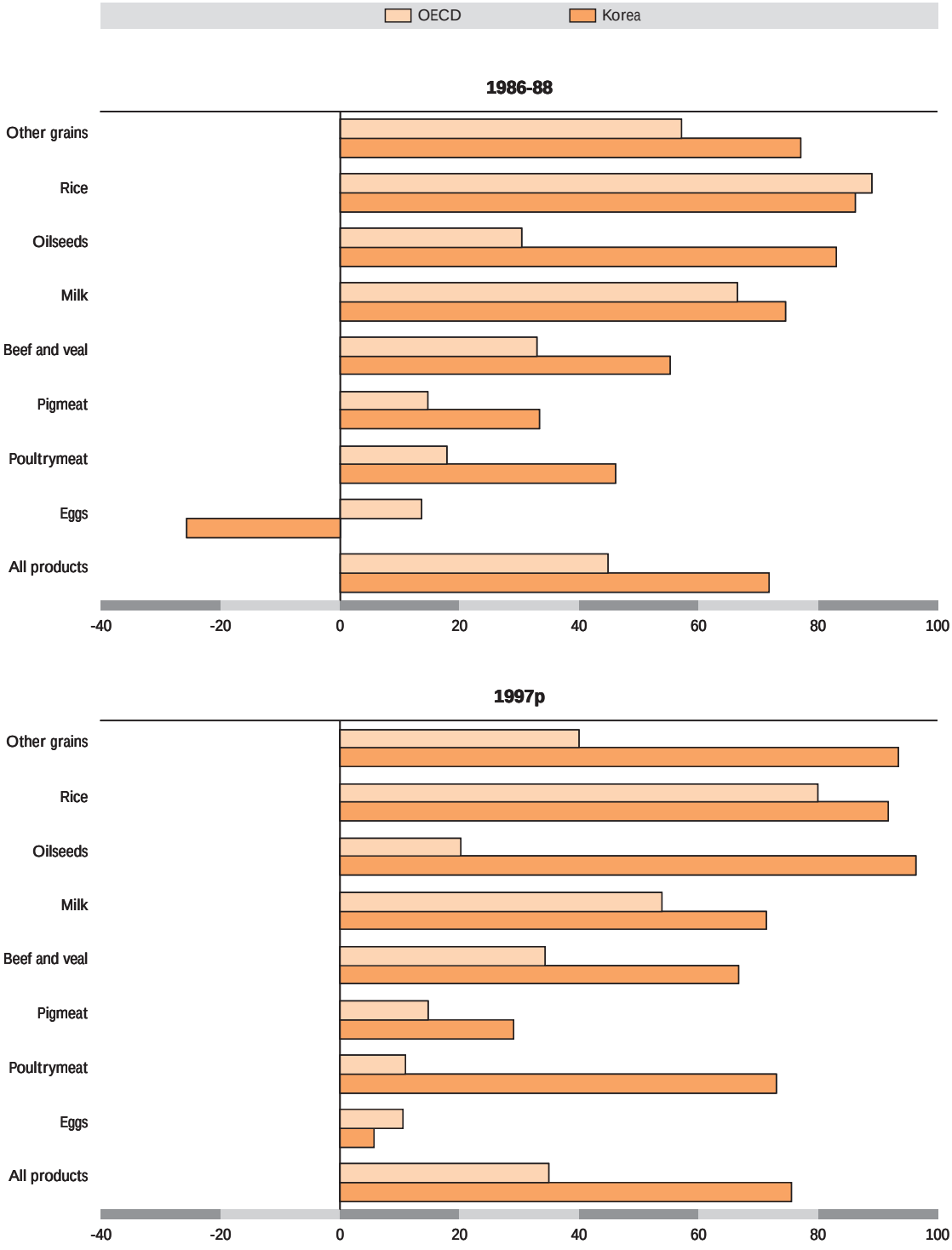
Source: Annex Table III.2, Annex I.

✦ Graph III.7. ***Total transfers in Korea and in the OECD area, 1997***



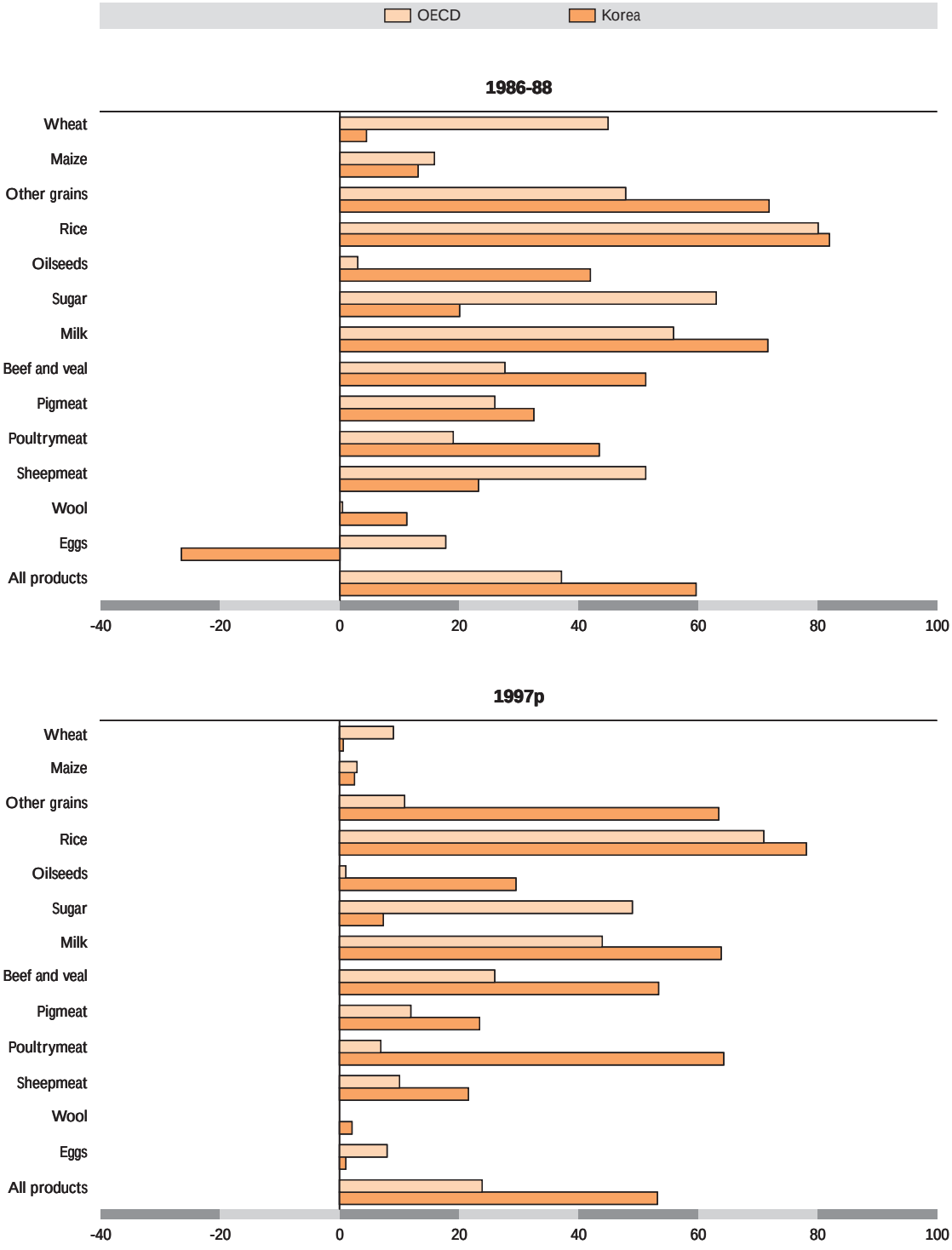
Note: The Czech Republic, Hungary, Mexico, Poland and Korea are not included in the OECD average.
Source: Annex Table III.2, Annex I ; OECD Secretariat, 1998.

✦ Graph III.8. ***Producer subsidy equivalents by commodity***
(%)



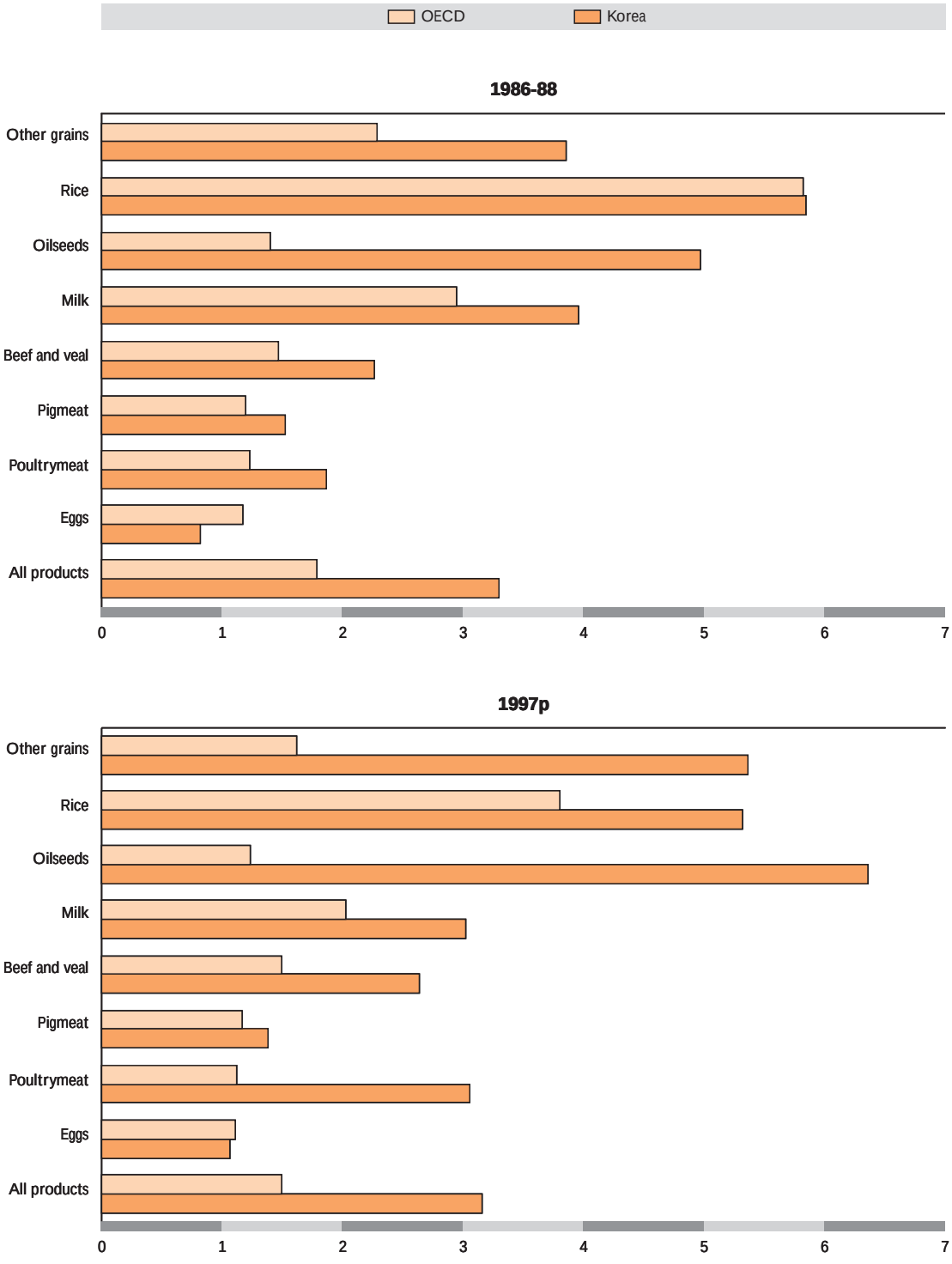
p: provisional.
Note: The Czech Republic, Hungary, Mexico, Poland and Korea are not included in the OECD average.
Source: Annex Table 15, Annex III; OECD Secretariat 1998.

✦ Graph III.9. ***Consumer subsidy equivalents by commodity***
(%)



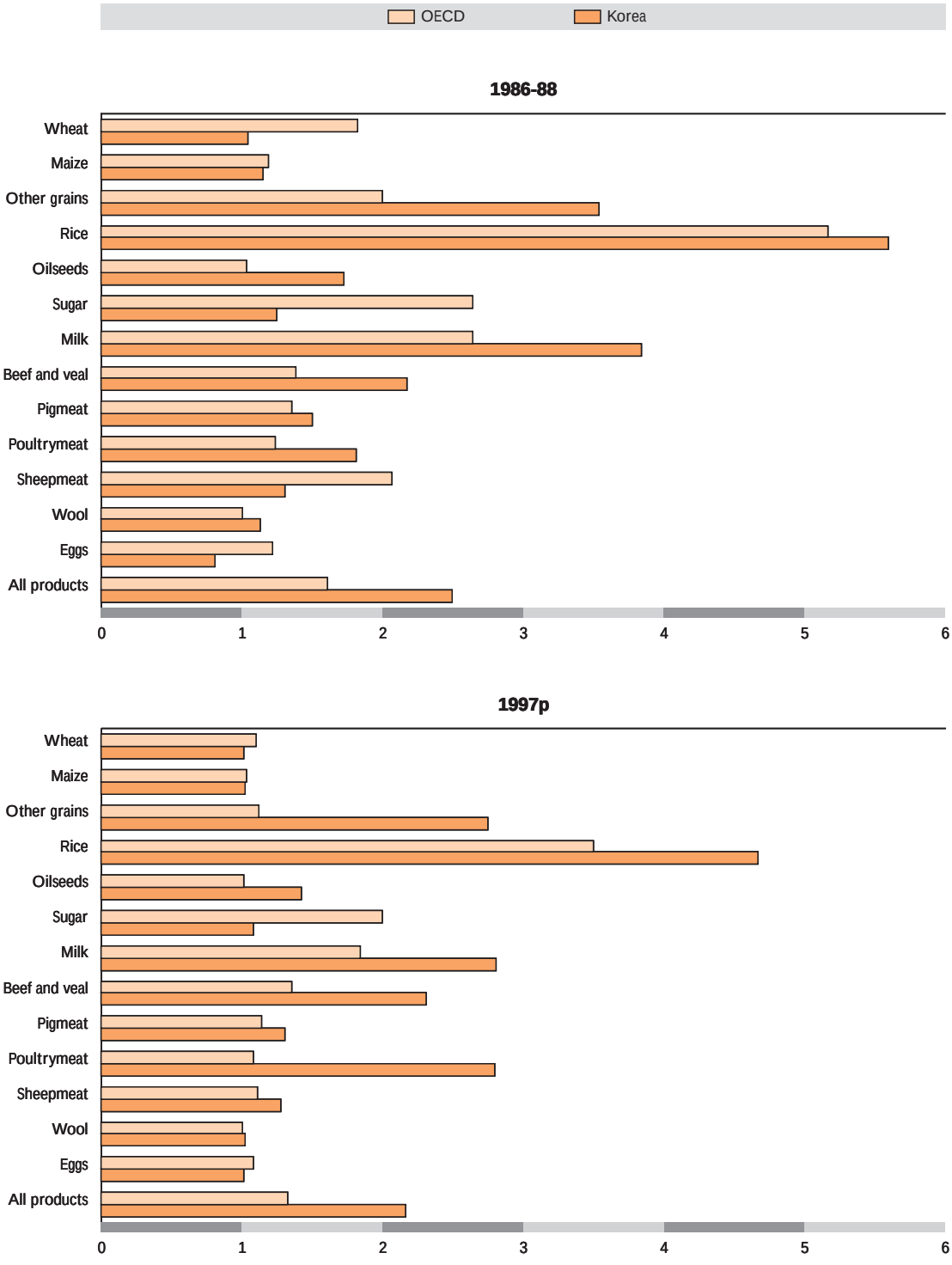
p: provisional.
Note: The Czech Republic, Hungary, Mexico, Poland and Korea are not included in the OECD average.
Source: Annex Table 16, Annex III; OECD Secretariat 1998.

◆ Graph III.10. ***Producer NAC by commodity***



p: provisional.
Note: The Czech Republic, Hungary, Mexico, Poland and Korea are not included in the OECD average.
Source: Annex Table 15, Annex III; OECD Secretariat 1998.

✦ Graph III.11. ***Consumer NAC by commodity***



p: provisional.
Note: The Czech Republic, Hungary, Mexico, Poland and Korea are not included in the OECD average.
Source: Annex Table 16, Annex III; OECD Secretariat 1998.

since 1995. As for wheat, the CSE for maize results from import tariffs, which in recent years have been at 0 or 1 per cent but also reflects support to domestic production which, in recent years, has been higher than the support afforded by the tariff. The CSE for maize fell from over 20 per cent in 1979-81 to 2 per cent in 1997 as import tariffs were reduced, domestic production fell and imports grew,. Consumer NACs were also close to 1 at the end of the period.

c) Other grains (Table 2B – Annex III)

In the case of Korea, barley is the only cereal from the OECD standard list of other grains for which a PSE is calculated. Production has fallen significantly over the period and accounted for only 1 per cent of the total value of agricultural production in 1997. However, during the same period, support has increased sharply as shown by the percentage PSE, which rose from 42 per cent in 1979 to close to 80 per cent in 1986-88 and over 90 per cent in the most recent years. This level is much higher than the OECD average for other grains which was 40 per cent in 1997.

Barley is mainly used, unprocessed, for human food consumption but also for animal feed and brewing. Barley consumption has declined over the period in parallel with production. The CSE for barley has not increased as much as the PSE but is nevertheless very high at around 75 per cent in recent years, except in 1997 when it fell to 64 per cent due to a reduction in domestic production and therefore in total market price support. The CSE mainly reflects market price support on the part of consumption that is produced domestically plus the effect of the import tariff. The first component dominates the CSE. Customs receipts are very small as imports are limited and tariffs relatively low. The consumer NAC for barley was around 4 in recent years but dropped to 3 in 1997.

d) Rice (Table 3 – Annex III)

Rice still represented over 40 per cent of total crop production and over 30 per cent of total agricultural production in 1997, although those percentages have decreased over the review period. As a result, the rice PSE dominates the PSE for crops and has a strong influence on the total PSE. Starting from a higher level than that for barley, the percentage PSE of rice has also increased sharply during the period. From 62 per cent in 1979, it reached a peak of 97 per cent in 1993 and 1995, and declined to 92 per cent in 1996 and 1997. Variations in rice PSE are mainly due to world price movements. In particular, the fall from 97 per cent in 1995 to 92 per cent in 1996 and 1997 reflects a rise in the world price which reached a record level in those years. In 1997, the OECD average PSE for rice, which is dominated by the Japanese rice PSE, was 80 per cent.

Rice consumption has fallen steadily since 1986 to 5 million tonnes in 1997. Self-sufficiency in rice was attained in 1983 and maintained almost every year until 1990. In the early 1990s, the ratio production/consumption slightly decreased due to poor harvests but was restored to over one in 1996. The evolution of the percentage CSE follows closely that of the percentage PSE as the unit market price support granted to producers is the main source of the implicit tax on consumers measured by the CSE. However, the percentage CSE is slightly lower than the PSE and the gap has tended to widen over time, on the one hand because transfers from taxpayers to producers increased more quickly than transfers from consumers to producers, and on the other hand because consumer subsidies have been significantly higher at the end of the period. Consumer NACs have been over 5 since 1986-88, and reflecting the producer NAC, peaked at 9 in 1993, and fell again to 5 in 1996 and 1997.

e) Oilseeds (Table 4 – Annex III)

Oilseed production in Korea consists mainly of soybeans. Soybean production was relatively stable during the 80s but declined significantly in the 90s. It now accounts for only 1 per cent of total agricultural production. At the same time the level of support for soybeans, as measured by the percentage PSE, rose from 60 per cent in 1979 to 99 per cent in 1995 and 1996, the highest commodity PSE observed for Korea. It was 96 per cent in 1997. As for other commodities, the PSE is dominated by market price support. For the OECD on average, the percentage PSE for oilseeds is only 20 per cent in 1997. However, it should be

noted that soybeans production is declining and provided less than 10 per cent of consumption in 1997, the remainder being imported with very low tariffs.

Soybean consumption rose almost threefold between 1979 and 1997 as imports for feed use rose. Because domestic production represents a small and declining share of total consumption and because imports are subject to a low tariff, the percentage CSE for soybeans, which fluctuated between 36 and 49 per cent most years, is relatively low compared to the PSE. The lowest percentage CSE is recorded in 1991 (28 per cent) due to exceptionally high subsidies to compensate the processing industry for paying higher prices in the domestic market than in the international market. The consumer NAC was slightly below 2 at the end of the period and fell to 1.4 in 1997 due to a decline in market price support resulting from a higher world price and a lower producer price.

f) Sugar (Table 5 – Annex III)

As sugar is not produced in Korea, no PSE is calculated for this commodity. Sugar consumption has increased over the review period to reach 781 000 tonnes in 1997. The CSE for sugar results from tariffs on sugar imports. As the tariff rate has been declining over the period, the percentage CSE on sugar has also fallen and was 7 per cent in recent years compared to 29 per cent at its highest in the early 1980s. The consumer NAC was close to 1 in the 1990s.

g) Milk (Table 6 – Annex III)

From a very low level in 1979, milk production has increased steadily to over 2 million tonnes in 1996 and fell slightly to 1.9 million tonnes in 1997, or, in value terms, 14 per cent of total livestock production. As for other commodities, support to milk consists mainly of market price support, but in contrast to crop commodities and in common with other livestock commodities, expenditures on "reduction of input costs" are high relative to general services, because most structure/infrastructure expenditures benefit crops only. Support to milk, as measured by the percentage PSE, has fluctuated over the period from a minimum of 63 per cent in 1982 to a maximum of 82 per cent in 1986. In the 1990s, the percentage PSE for milk fell from 78 per cent in 1990 to 71 per cent in 1997 as domestic price rises were less than reference price rises. By comparison, the OECD PSE for milk was 54 per cent in 1997.

Milk consumption followed production very closely in the 80s but exceeded it in the 90s. The CSE for milk is calculated by multiplying the unit market price support received by producers by consumption and there is a slight offset from a small amount of consumer subsidy. As a result, the percentage CSE follows the movements in percentage PSE but is slightly lower. This gap has been widening as expenditures on capital grants, interest concessions and research from the LIDF for livestock commodities increased their share of the PSE in the last few years. In 1997, the percentage CSE for milk was 64 per cent and the consumer NAC was 2.8.

h) Beef and veal (Table 7 – Annex III)

Beef production is cyclical with a slight upward trend over the period while consumption increased steadily, widening the domestic deficit. Beef production accounts for over 30 per cent of livestock production and is the most important of the livestock commodities. From about 55 per cent at the beginning of the period, the percentage PSE for beef and veal increased in the early 1980s and then fell to 50 per cent in 1987, rose again to reach 76 per cent in 1995 but fell to 67 per cent in 1997. This rise in percentage PSE from 1988 is due to a higher level of market price support but from 1990, budgetary support, including direct payments, increased significantly. The drop in PSE in 1997 is due to a reduction in market price support as domestic prices fell by more than 20 per cent and world prices rose by 4 per cent. In 1997 the OECD average percentage PSE for beef and veal was 34 per cent.

The percentage CSE was very close to the percentage PSE at the beginning of the period when transfers from taxpayers to producers or consumers were negligible. It fell below the PSE in the mid-1980s when significant subsidies were given to wholesalers and again in the 1990s when expenditures on research, capital grants and interest concessions rose. For example, it was 54 per cent in 1979 when the

PSE was 56 per cent and 53 per cent in 1997 when the PSE was 67 per cent. The consumer NAC has been around 3 in recent years and fell to 2.3 in 1997.

i) Pigmeat (Table 8 – Annex III)

Pigmeat production has increased significantly over the period, in parallel with consumption, and now represents 28 per cent of total livestock production. The percentage PSE for pigmeat has fluctuated quite widely over the period, between 22 per cent and 63 per cent, following variations in domestic and world prices. It fell from 53 per cent in 1995 to 29 per cent in 1997, reflecting higher world prices, while the OECD average decreased from 20 to 15 per cent. Except for eggs, the percentage PSE for pigmeat is the lowest of the livestock commodities in Korea.

The CSE reflects almost exclusively the unit market price support (applied to consumption) because subsidies to wholesalers are very small. The percentage CSE is therefore very close to the percentage PSE although at the end of the period, it tends to diverge when government expenditures on research, capital grants and interest concessions become more important in the PSE, as is also the case for beef and veal. The percentage CSE was 36 per cent in 1979 and 24 per cent in 1997 but has fluctuated between 21 and 61 per cent over that period. The consumer NAC was down to 1.3 in 1997.

j) Poultrymeat (Table 9 – Annex III)

Only chickenmeat is taken into account in the PSE calculations. As for pigmeat, poultrymeat production and consumption increased in parallel over the period. The percentage PSE followed a sharp upward trend from 30 per cent in 1979 to 75 per cent in 1995. It then fell to 73 per cent in 1997 as world prices increased by 16 per cent between 1995 and 1997. This compares to an OECD average of 11 per cent.

As for pigmeat, the percentage CSE for chickenmeat is only slightly lower than the percentage PSE at the beginning of the period but this gap widens as the non market price support elements of the PSE increase. The percentage CSE was 64 per cent in 1997 and the consumer NAC 2.8.

k) Sheepmeat (Table 10 – Annex III)

Because sheepmeat production in Korea is negligible, no PSE is calculated for this commodity. Sheepmeat consumption is also very small, much lower than that of other meats. The CSE for sheepmeat reflects tariffs on imports which varied between 25 and 30 per cent during the review period. As a result, the percentage CSE for sheepmeat was around 20-23 per cent for the same period and the consumer NAC was 1.3.

l) Wool (Table 11 – Annex III)

Because wool production in Korea is negligible, no PSE is calculated for this commodity. Wool consumption fluctuates between 22 000 and 44 000 tonnes over the period. As for sheepmeat, the CSE for wool results from tariffs on imports. These were reduced from 30 per cent in 1979 to 2 per cent in 1997. This decline is reflected in the percentage CSE which fell from 38 per cent in 1979 to 2 per cent in 1997 and in a consumer NAC declining from 1.6 to 1.

m) Eggs (Table 12 – Annex III)

Both production and consumption of eggs have doubled in Korea over the review period to reach 478 000 tonnes in 1997. Domestic prices for eggs in Korea are very close to world prices and both prices fluctuated widely during the period but not always in parallel. As a result, market price support shows very small positive or negative numbers most years with notable exceptions in 1986 and around 1990 where levels are significant. This would indicate that price transmission is not effective, maybe because of poor marketing structures. The percentage PSE and CSE are determined by this variation in market transfert.

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Annex I

BACKGROUND TABLES

Annex Table I.1. **Land use**

	1970	1975	1980	1985	1990	1995	1996	1997
Total area ('000 ha)	9 848	9 881	9 899	9 914	9 927	9 927	9 931	9 937
of which forest (%)	67.1	67.2	66.3	65.9	65.3	65.0	64.9	64.8
of which cultivated land (%)	23.3	22.7	22.2	21.7	21.4	20.0	19.6	19.4
Total cultivated land ('000 ha)	2 298	2 240	2 196	2 144	2 109	1 985	1 946	1 924
Paddy fields (%)	55.4	57.0	59.5	61.8	63.8	60.8	60.5	60.4
Upland (%)	44.6	43.0	40.5	38.2	36.2	39.3	39.5	39.6
of which								
Rice (%)	52.8	54.4	56.2	57.7	59.0	53.2	53.9	54.7
Barley (%)	47.2	31.7	15.1	11.1	7.5	4.5	4.9	3.6
Soybeans (%)	13.0	12.2	8.6	7.3	7.2	5.3	5.0	5.2
Vegetables (%)	11.1	10.9	16.4	15.7	13.1	20.3	20.0	18.9
Fruits (%)	2.6	3.3	4.5	5.1	6.2	8.8	8.9	9.1

Source: MAF, *Statistical Yearbook of Agriculture and Forestry,* various years, Seoul.

Annex Table I.2. **Main economic indicators**

	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997
Population, mid-year[2, 4] (million persons)	32.2	35.3	38.1	40.8	42.9	43.3	43.7	44.2	44.6	45.1	45.5	46.0
Population density[2, 4] (persons per sq. km)	328	357	385	412	432	436	440	445	449	454	459	463
Dependency ratio[2, a] (%)	83.8	72.5	60.7	52.5	44.3	43.8	42.9	42.5	42.0	41.4	40.7	40.3
Index of ageing[1, b] (%)	n.a.	9.0	11.2	14.2	20.0	20.3	21.7	22.7	23.9	25.2	26.7	28.3
GNP, current[2] (trillion won)	2.8	10.1	36.9	79.3	178.3	214.2	238.7	265.5	303.8	349.0	386.6	416.0
GDP, current[1, 2, 3] (trillion won)	2.8	10.3	38.1	82.1	179.5	215.7	240.4	267.1	306.0	352.0	390.0	421.0
GDP growth[c, d], annual[1] (%)	n.a.	8.1	7.1	8.1	10.0	9.1	5.1	5.8	8.6	8.9	7.1	5.5
GDP per capita[2] (US$)	277	603	1 647	2 309	5 909	6 789	7 045	7 530	8 538	10 123	10 640	9 624
Exchange rate won/US$[3]	310.6	484.0	607.9	870.6	708.0	733.6	780.8	802.7	803.6	771.0	804.8	951.1
GDP deflator[3] (1990 = 100)	7.6	19.2	50.6	73.7	100.0	110.1	116.8	122.7	129.4	136.7	141.4	144.7
GDP deflator growth[1, d]	n.a.	20.4	21.4	7.8	6.3	10.1	6.1	5.1	5.5	5.6	3.4	2.3
CPI (1990 = 100)	n.a.	24.6	54.5	76.8	100.0	109.3	116.1	121.7	129.3	135.1	141.8	148.2
CPI [1, d] (%)	n.a.	n.a.	17.2	7.1	5.4	9.3	6.2	4.8	6.2	4.5	5.0	4.5
Employment[1, 2] (million persons)	9.6	11.7	13.7	15.0	18.1	18.6	19.0	19.3	19.8	20.4	20.8	21.0
Annual growth rate[d]	n.a.	4.0	3.2	1.8	3.9	2.9	1.9	1.5	3.0	2.7	2.3	1.4
Unemployment rate[1, 2] (%)	4.5	4.1	5.2	4.0	2.4	2.3	2.4	2.8	2.4	2.0	2.0	2.6
Wages ('000 won)[1, e]	14	38	147	270	591	690	799	885	1 023	1 124	1 261	1 326
% change[d]	n.a.	21.8	30.7	13.0	17.0	16.8	15.7	10.9	15.5	9.9	12.2	5.2
Nominal wage index (1990 = 100)	2.4	6.5	24.8	45.6	100.0	116.8	135.2	149.9	173.1	190.2	213.5	224.5
Real earnings[f]	n.a.	26.4	45.6	59.4	100.0	106.9	116.4	123.2	133.9	140.8	150.6	151.7
Budget deficit (billion won)[1]	n.a.	–337	–584	644	755	–1 707	–689	235	1 730	1 712	108	–70
External debt (billion US$)[2]	2.2	8.4	27.2	46.8	31.7	39.1	42.8	43.9	56.9	78.4	104.7	120.8
% of GDP	25.2	39.7	43.3	49.6	12.5	13.3	13.9	13.2	14.9	17.2	21.6	27.3
Current account[2, 3, g] (billion US$)	n.a.	n.a.	–5.3	–0.8	–2.2	–8.3	–3.9	1.0	–3.9	–8.5	–23.0	–8.6
Trade balance[2, 3, g] (billion US$)	n.a.	n.a.	–4.6	0.4	–3.1	–9.0	–4.6	0.2	–4.7	–7.4	–21.1	–6.8
Imports, fob[2, 3, g]												
Billion US$	n.a.	n.a.	21.9	26.7	66.1	77.3	78.0	79.8	97.8	129.1	144.9	142.5
% of GDP	n.a.	n.a.	34.9	28.3	26.1	26.3	25.3	24.0	25.7	28.3	29.9	32.2
Exports, fob[2, 3, g]												
Billion US$	n.a.	n.a.	17.2	26.6	63.7	70.5	76.2	82.1	95.0	124.6	130.0	138.6
% of GDP	n.a.	n.a.	27.4	28.2	25.1	24.0	24.7	24.7	25.0	27.3	26.8	31.3
Average tariff rate (%)												
All products	n.a.	n.a.	n.a.	n.a.	11.4	11.4	10.1	8.9	7.9	7.9	n.a.	n.a.
Agricultural products	n.a.	n.a.	n.a.	n.a.	19.9	19.9	18.5	17.8	16.6	16.6	n.a.	n.a.
General government budget[2]												
As a % of GDP	n.a.	24.1	27.6	24.5	24.9	25.9	27.0	27.7	31.7	33.1	32.7	32.6

Annex Table I.2. **Main economic indicators** *(cont.)*

	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997
Gross fixed capital formation[3]												
Trillion won	0.7	2.7	12.2	23.4	66.6	83.0	87.9	96.2	109.4	128.7	143.4	147.3
% of GDP	25.1	26.7	32.1	28.6	37.1	38.5	36.6	36.0	35.8	36.6	36.8	35.0
% growth rate[d]	n.a.	31.6	34.8	13.9	23.2	24.6	6.0	9.5	13.7	17.6	11.4	2.5
Household saving[3]												
Trillion won	n.a.	0.6	2.5	7.5	23.9	32.2	32.8	32.7	35.9	40.7	n.a.	n.a.
% of GDP	n.a.	5.4	6.5	9.1	13.3	14.9	13.6	12.3	11.7	11.6	n.a.	n.a.
% growth rate[d]	n.a.	n.a.	34.9	24.8	26.0	34.9	1.9	–0.1	9.7	13.4	n.a.	n.a.
Direct investment[2, 3]												
Outward (million US$)	0	–4	–13	–34	–820	–1 357	–1 048	–1 056	–2 075	–3 120	–3 934	n.a.
Inward (million US$)	66	62	96	250	715	1 116	551	516	758	1 240	1 953	n.a.

n.a.: not available.
a. Younger than 14 years old plus older than 65 as a proportion of 15-64 years old.
b. Older than 65 years old as a proportion of younger than 14.
c. GDP (Market Price), Volume, 1990, constant price.
d. For 1975, 1980, 1985 and 1990, the annual growth is calculated as an average rate of the 5 previous year value.
e. Monthly earnings of regular employees in manufacturing. Data from Jan. 1993 are based on the revised Korean Standard Industrial Classification.
f. Wages deflated by consumer price index.
g. Revised by the Bank of Korea in January 1998 in accordance with IMF calculations of Balance of Payments.
Source: 1. Bank of Korea (1997), *Economic Statistics Yearbook 1997,* Seoul.
2. National Statistical Office (1997), *Major Statistics of Korean Economy 1997,* Seoul.
3. OECD (1996), *OECD Economic Survey: Korea,* Paris.
4. National Statistical Office (1997), *Major Statistics of Korean Economy 1997,* Seoul, in MAF (1997), *Statistical Yearbook of Agriculture and Forestry,* Seoul.

Annex Table I.3. **Contribution of agriculture to the economy**

	1970	1975	1980	1985	1990	1995	1996	1997
Farm population[4] (million)	14.4	13.2	10.9	8.5	6.7	4.9	4.7	4.5
Average annual % change	n.a.	–1.6	–3.5	–4.4	–4.4	–5.4	–3.3	–4.8
As a percentage of total population (%)	44.8	37.5	28.6	20.9	15.5	10.8	10.3	9.7
Farm households[4] ('000)	2 483	2 379	2 155	1 926	1 767	1 501	1 480	1 440
Average annual % change	n.a.	–0.8	–1.9	–2.1	–1.6	–3.0	–1.4	–2.7
As a percentage of total households (%)	42.4	35.2	27.0	20.1	15.6	11.6	n.a.	n.a.
Agricultural production[4, b] (trillion won)	0.8	2.5	6.4	12.2	17.7	25.9	28.1	29.3
Index of production (1989-91 = 100)	51.8	67.2	67.5	96.2	97.9	111.7	118.6	123.4
Agricultural GDP[4] (trillion won)	0.6	2.3	4.8	8.7	13.3	19.7	21.1	20.7
Average annual % change	n.a.	56.7	21.7	16.3	10.6	9.6	7.1	–2.1
As a percentage of total GDP[1, 4] (%)	23.3	21.9	12.5	10.6	7.4	5.6	5.4	4.9
Average annual % change	n.a.	–1.2	–8.6	–3.0	–6.0	–4.9	–3.6	–9.3
Farm employment[4] ('000)	4 846	5 339	4 654	3 733	3 237	2 541	2 405	2 324
Average annual % change	n.a.	2.0	–2.6	–4.0	–2.7	–4.3	–5.4	–3.4
Share of agriculture in employment[1, 4] (%)	50.5	45.6	34.0	24.9	17.9	12.5	11.6	11.0
Average annual % change	n.a.	–1.9	–5.1	–5.3	–5.6	–6.1	–7.2	–5.2
Value of agricultural exports, fob[3, 4]								
(million US$)	55	345	541	388	795	1 242	1 424	1 508
As a percentage of total exports[3, 4] (%)	6.1	6.9	3.1	1.5	1.3	1.0	1.1	1.1
Value of agricultural imports, fob[3, 4]								
(million US$)	347	1 033	2 215	1 791	3 754	6 899	8 152	7 619
As a percentage of total imports[3, 4] (%)	19.2	15.4	10.3	6.8	5.8	5.4	5.7	5.3
Share of food in consumption expenditures[2, a]								
(%)	46.6	48.8	43.2	37.5	32.0	28.8	28.5	28.7
Average annual % change	n.a.	0.9	–2.3	–2.6	–2.9	–2.0	–1.0	0.7

n.a.: not available.
a. based on monthly consumption expenditure per household for all households in all cities.
b. excluding forestry and fisheries.
Source: 1. Bank of Korea (1997), *Economic Statistics Yearbook 1997,* Seoul.
2. National Statistical Office (1997), *Major Statistics of Korean Economy 1996,* Seoul.
3. MAF (1996), *Korean Agriculture 1996,* Seoul.
4. MAF, *Statistical Yearbook of Agriculture and Forestry,* various years, Seoul.

Annex Table I.4. **Production**

'000 tonnes

Year[1]	1970	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Rice	3 939	4 669	3 550	5 607	5 493	6 053	6 053	5 898	5 606	5 384	5 331	4 750	5 060	4 695	5 323	5 450
Wheat	219	97	92	11	5	4	2	1	1	1	1	1	2	10	11	7
Maize	68	54	154	132	113	127	106	121	120	75	92	82	89	74	72	87
Barley[2]	1 591	1 700	1 101	792	627	719	781	714	574	485	448	449	321	393	401	259
Soybean	232	311	216	234	199	203	239	252	233	183	176	170	154	160	160	156
Garlic	n.a.	103	253	256	370	401	303	357	417	481	465	393	362	462	456	394
Red pepper	n.a.	128	125	165	198	138	209	149	133	141	172	187	176	193	218	201
Apples	n.a.	280	410	533	538	556	640	676	629	542	695	616	617	716	651	652
Water melon	n.a.	131	335	473	483	419	465	432	447	515	567	530	433	588	382	388
Mandarines	n.a.	67	161	371	340	441	415	747	493	556	719	619	549	615	514	649
Sesame	n.a.	25	12	41	48	43	52	40	38	30	29	16	28	32	29	33
Milk	48	160	452	1 006	1 154	1 413	1 632	1 762	1 752	1 741	1 816	1 858	1 917	1 998	2 034	1 984
Beef and veal	53	100	133	167	215	213	181	129	136	141	142	185	210	221	248	339
Pork	106	127	302	443	412	483	554	622	649	640	771	793	796	820	887	896
Poultry (chicken)	65	79	129	180	185	201	213	221	245	295	338	342	347	376	395	371
Eggs	135	159	250	296	332	362	397	381	393	422	424	447	440	454	470	478

n.a.: not available.
1. Calendar years.
2. Including malting barley.
Source: MAF Korea, Seoul.

Annex Table I.5. **Livestock numbers**

	Units	1970	1975	1980	1985	1990	1995	1996	1997	Variation 1995/80 (%)
Native beef cattle										
Number of animals	'000 heads	1 286	1 556	1 361	2 553	1 622	2 594	2 844	2 735	91
Number of farms	'000 farms	1 102	1 277	948	1 048	620	519	513	465	–45
Number of animals per farm	heads	1.2	1.2	1.4	2.4	2.6	5.0	5.5	5.9	248
Dairy cattle										
Number of animals	'000 heads	24	86	180	390	504	553	552	544	207
Number of farms	'000 farms	3	9	18	44	33	24	21	17	31
Number of animals per farm	heads	7.6	9.1	10.0	8.9	15.1	23.5	26.1	31.3	135
Pigs										
Number of animals	'000 heads	1 126	1 247	1 784	2 853	4 528	6 461	6 516	7 096	262
Number of farms	'000 farms	884	654	503	251	133	46	33	27	–91
Number of animals per farm	heads	1.3	1.9	3.5	11.4	33.9	140.8	195.8	261.5	3 871
Chicken										
Number of animals	'000 heads	23 633	20 939	40 130	51 081	74 463	85 800	82 829	88 251	114
Number of farms	'000 farms	1 338	1 094	692	303	161	203	187	162	–71
Number of birds per farm	heads	17.7	19.1	58.0	168.7	461.5	421.8	442.9	543.3	628

Source: MAF, *Statistical Yearbook of Agriculture and Forestry,* various years, Seoul.

Annex Table I.6. Characteristics of the farm population

	Units	1970	1975	1980	1985	1990	1995	1996	1997
Farm population	'000	14 422	13 244	10 827	8 521	6 661	4 851	4 692	4 468
Male	%	49.7	50.2	50.0	49.8	49.2	48.9	48.2	48.1
Female	%	50.3	49.8	50.0	50.2	50.8	51.1	51.8	51.9
< 19 years old	%	53.9	51.0	45.4	39.7	31.6	22.7	22.6	21.4
20-49	%	30.5	31.8	34.2	33.2	33.9	33.5	31.1	31.2
50-59	%	7.7	8.4	9.9	13.2	16.7	17.9	17.7	17.5
> 60	%	7.9	8.8	10.5	13.8	17.8	25.9	28.6	29.9
Farm households	'000	2 483	2 379	2 155	1 926	1 767	1 501	1 480	1 440
Full time	%	67.7	80.6	76.2	78.8	59.6	56.6	56.5	58.7
Part time I[1]	%	19.7	12.5	13.7	8.7	22.0	18.5	16.5	14.2
Part time II[2]	%	12.6	6.9	10.1	12.5	18.4	25.0	27.0	27.1
Non crop[3]	%	2.9	4.0	1.3	2.4	1.3	1.6	1.7	1.6
< 0.5 ha	%	31.7	29.0	28.4	27.7	27.3	28.9	29.7	30.4
0.5-1.0 ha	%	33.2	34.8	34.7	35.6	30.8	28.8	28.5	28.5
1.0-2.0 ha	%	25.7	26.0	29.2	28.6	30.7	27.9	27.4	26.6
2.0-3.0 ha	%	5.0	4.7	5.0	4.5	7.3	8.2	7.9	8.0
> 3 ha	%	1.5	1.5	1.4	1.2	2.5	4.7	4.8	4.9
Average number of household members		5.8	5.6	5.0	4.4	3.8	3.2	3.2	3.1
Average size	ha	0.93	0.94	1.02	1.11	1.19	1.32	1.31	1.34

1. Households which agricultural income exceeds 50 per cent of their total annual income.
2. Households which agricultural income is less than 50 per cent of their total annual income.
3. Non-crop farm households are farm households without cultivated land.

Source: MAF, *Statistical Yearbook of Agriculture and Forestry,* various years, Seoul.

Annex Table I.7. **Index numbers of prices received by farmers and farm wages (1990 = 100)**

	1970	1975	1980	1985	1990	1995	1996	1997
All farm products	7.8	20.4	53.3	74.1	100.0	135.6	142.4	138.3
Grains and potatoes	6.8	20.6	53.8	74.3	100.0	129.2	148.0	149.8
Rice	6.9	20.9	54.8	74.5	100.0	126.2	146.6	148.9
Fruits	12.7	32.5	77.0	77.6	100.0	180.8	155.8	177.3
Vegetables	14.3	25.9	63.3	90.6	100.0	143.2	148.8	146.7
Livestock and poultry products	7.0	16.0	44.2	64.4	100.0	126.5	126.5	113.0
Farm wages and charges	3.5	9.5	40.9	61.2	100.0	147.7	157.4	163.9
Farm wages	3.1	7.9	35.7	52.3	100.0	179.4	196.6	208.8

Source: MAF, *Statistical Yearbook of Agriculture and Forestry,* various years, Seoul.

Annex Table I.8. **Production and consumption of chemical fertilisers**

'000 tonnes

	1970	1975	1980	1985	1990	1995	1996	1997	Variation 1995/80 (%)
Nitrogen^{N}									
Production	401	583	729	686	867	950	975	923	30.3
Consumption	356	481	448	414	562	472	456	446	5.3
Phosphorus (N_2O_5)									
Production	140	195	494	493	454	485	460	450	–1.9
Consumption	124	238	196	186	256	223	209	199	13.9
Potash (K_2O)									
Production	50	82	107	233	327	343	328	314	220.7
Consumption	83	167	184	207	285	259	244	237	41.0

Source: Bank of Korea (1997), *Economic Statistics Yearbook 1997,* Seoul. MAF, *Statistical Yearbook of Agriculture and Forestry,* various years, Seoul

Annex Table I.9. **Farm machinery equipment per 100 farms**

	1970	1975	1980	1985	1990	1995	1996	1997	Variation 1995/80 (%)
Power tillers	n.a.	4	13	31	43	58	62	66	331
Farm tractors	n.a.	0	0	1	2	7	8	9	5 240
Rice transplanters	n.a.	0	1	2	8	17	18	21	3 108
Harvesting machines	n.a.	0	1	2	6	9	10	10	1 242
Power dusting equipment	n.a.	6	15	27	39	48	48	49	208
Water pumps	n.a.	3	9	15	19	26	28	28	185
Threshing machines	n.a.	5	10	16	15	8	7	7	–20
Sowing machines	n.a.	0	0	0	0	1	1	1	433

n.a.: not available.
Source: MAF, *Statistical Yearbook of Agriculture and Forestry,* various years, Seoul.

Annex Table I.10. **Yields of selected agricultural commodities**

	Units	1970	1975	1980	1985	1990	1995	1996	1997
Rice									
Planted area	'000 ha	1 203	1 218	1 233	1 237	1 244	1 056	1 050	1 052
Production[1]	'000 tonnes	3 939	4 669	3 550	5 626	5 606	4 695	5 323	5 450
Yield	T/ha	3.27	3.83	2.88	4.55	4.51	4.45	5.07	5.18
Barley									
Planted area	'000 ha	730	711	331	238	159	88	93	68
Production[1, 2]	'000 tonnes	1 590	1 700	1 101	792	574	393	401	259
Yield	T/ha	2.18	2.39	3.33	3.33	3.61	4.47	4.31	3.81
Soybeans									
Planted area	'000 ha	295	274	188	156	152	105	98	100
Production	'000 tonnes	232	311	216	234	233	160	160	156
Yield	T/ha	0.79	1.14	1.15	1.50	1.53	1.52	1.63	1.56
Milk									
Production	'000 tonnes	48	160	452	1 006	1 752	1 998	2 034	1 984
Yield/cow	Kg	3 304	4 146	4 481	4 681	5 372	5 836	5 959	5 882

1. Polished grains.
2. Including malting barley and unhulled grains.
Source: MAF, *Statistical Yearbook of Agriculture and Forestry,* various years, Seoul.

Annex Table I.11. **Farm and urban household income**

'000 won

	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997
Agricultural income (A)	89	194	715	1 755	3 699	6 264	7 035	7 356	8 427	10 325	10 469	10 837	10 204
Non-Agricultural income[1] (B)	23	62	158	938	1 060	2 841	3 662	4 423	5 040	6 184	6 931	7 487	8 677
Transfer revenue (C)	–	–	–	–	977	1 921	2 408	2 726	3 461	3 807	4 403	4 974	4 607
Farm household income (D)	**112**	**256**	**873**	**2 693**	**5 736**	**11 026**	**13 105**	**14 505**	**16 928**	**20 316**	**21 803**	**23 298**	**23 488**
Ratio A/D (%)	79.5	75.8	81.9	65.2	64.5	56.8	53.7	50.7	49.8	50.8	48.0	46.5	43.4
Disposable income (E)	**107**	**249**	**853**	**2 579**	**5 690**	**10 965**	**13 036**	**14 419**	**16 813**	**20 175**	**21 629**	**23 103**	**23 272**
Urban household income (F)	**102**	**338**	**786**	**2 809**	**5 086**	**11 320**	**13 903**	**16 273**	**17 734**	**20 416**	**22 933**	**25 832**	**27 448**
Ratio D/F (%)	109.8	75.7	111.1	95.9	112.8	97.4	94.3	89.1	95.5	99.5	95.1	90.2	85.6
In 1990 prices[2]													
Agricultural income	n.a.	n.a.	2 907	3 220	4 816	6 264	6 436	6 336	6 924	7 985	7 749	7 642	6 885
Farm household income	n.a.	n.a.	3 549	4 941	7 469	11 026	11 990	12 494	13 910	15 712	16 138	16 430	15 849
Urban household income	n.a.	n.a.	3 195	5 154	6 622	11 320	12 720	14 016	14 572	15 790	16 975	18 217	18 521

n.a.: not available.
1. Before 1983 non-agricultural income includes transfer income.
2. Deflated using the Consumer Price Index, 1990 = 100.
Source: MAF, *Main Agricultural Indicators,* 1995.
MAF, *Statistical Yearbook of Agriculture and Forestry, various years,* Seoul.

Annex Table I.12. **Composition of non-farm income, 1997**

'000 won

	Receipts	Expenditures	Income	Share (%)
Side business	3 848	2 024	1 824	100.0
Naturally obtained products	78	1	77	4.2
Forestry products	44	3	41	2.2
Marine products	359	157	202	11.1
Farm products processing	82	30	52	2.9
Commerce, industry and mine	1 900	1 305	595	32.6
Services	1 294	494	800	43.9
Others	91	34	57	3.1
Non business receipts	7 153		7 153	100.0
Agricultural wages	226		226	3.2
Other wages	3 566		3 566	49.9
Salary and Allowance	2 197		2 197	30.7
Rent for land	125		125	1.7
Rent for others	361		361	5.0
Interest	492		492	6.9
Waste articles receipts	2		2	0.0
Domestic Receipts	183		183	2.6
Non business expenses		698	–698	100.0
Interest for non agricultural debt		661	–661	94.7
Expenditures for off-farm employment		22	–22	3.2
Expenditures for property procurement		15	–15	2.1
Non business income			6 455	
Transfer receipts	4 607		4 607	100.0
Donation by Family	592		592	12.9
Remuneration and Donation	3 881		3 881	84.2
Retirement Pension	134		134	2.9

Source: MAF (1998), *Statistical Yearbook of Agriculture and Forestry 1998,* Seoul.

Annex Table I.13. **Distribution of household income by farm size, 1997**[1, 2]

Average per household in '000 won

	All farms	< 0.5 ha	0.5-1.0 ha	1.0-1.5 ha	1.5-2.0 ha	2.0-3.0 ha	3.0-5.0 ha	> 5 ha
Agricultural income	10 204	4 061	7 221	11 259	13 909	17 695	25 309	32 966
Non agriculture income	8 677	13 402	8 628	6 794	6 703	5 917	5 735	5 376
Transferred income	4 607	4 713	4 686	4 958	4 427	4 814	4 120	4 734
Farm household income	23 488	22 176	20 535	23 012	25 040	28 425	35 164	43 076
Share of agricultural income in total income (%)	43	18	35	49	56	62	72	77
Taxes and public charges	216	274	200	175	189	224	272	344
Disposable income	23 272	21 902	20 335	22 837	24 851	28 202	34 891	42 731

1. 1997 income by size of cultivated land in 1996.
2. Expenditures on interest for agricultural debt were included in non-business expenditures until 1996. From 1997, they are included in agricultural expenditures.

Source: MAF (1998), *Statistical Yearbook of Agriculture and Forestry 1998,* Seoul.

Annex Table I.14. **Distribution of household income by zone, 1997**

Average per household in '000 won

	All farms	Suburb	Plain	Semi-plain	Hilly
Agricultural income	10 204	8 065	13 064	10 839	9 693
Non agriculture income	8 677	12 819	8 487	8 426	6 304
Transferred income	4 607	4 334	5 007	4 624	4 640
Farm household income	23 488	25 218	26 557	23 889	20 637
Share of agricultural income in total income (%)	43	32	49	45	47
Taxes and public charges	216	323	239	217	140
Disposable income	23 272	24 895	26 318	23 672	20 497

Source: MAF (1998), *Statistical Yearbook of Agriculture and Forestry 1998,* Seoul.

Annex Table I.15. **Consumption per capita (kg)**

	1970	1975	1980	1985	1990	1995	1996	1997	Variation 1995/80 (%)
Food crops	219.4	207.3	195.2	181.7	167.0	160.5	160.2	157.8	–17.8
Rice	136.4	123.6	132.4	128.1	119.6	106.5	104.9	102.4	–19.6
Wheat	26.1	29.5	29.4	32.1	29.8	33.9	33.8	33.7	15.3
Vegetables	59.9	62.5	120.3	98.6	132.6	158.5	152.2	145.0	31.8
Fruits	13.1	15.0	22.3	36.0	41.8	55.4	52.3	57.9	148.4
Livestock (retail weight equivalent)									
Meat	5.2	6.4	11.3	14.4	19.9	27.4	28.7	29.3	142.5
Beef	1.2	2.0	2.6	2.9	4.1	6.7	7.1	7.9	157.7
Pork	2.6	2.8	6.3	8.4	11.8	14.8	15.3	15.3	134.9
Chicken meat	1.4	1.6	2.4	3.1	4.0	5.9	6.3	6.1	145.8
Dairy products	1.6	4.6	10.8	23.8	42.8	47.8	54.5	53.3	342.6
Fluid milk	0.7	3.4	6.8	17.6	30.5	33.2	32.6	33.6	388.2
Processed milk	0.9	1.2	4.0	6.2	12.3	14.6	21.9	19.7	265.0
Eggs	4.2	4.5	6.5	7.2	9.2	10.1	10.4	10.4	55.4

Source: MAF, *Main Agricultural Indicators,* various years, Seoul.

Annex Table I.16. **Imports and exports of agricultural products**

Million US$

	Exports (A)	Imports (B)					Balance (A-B)
		Total	All grains	Vegetables	Fruits	Livestock	
1970	55	347	245	1	1	10	–292
1979	400	1 812	911	17	9	212	–1 412
1980	541	2 215	1 261	1	8	66	–1 674
1981	571	3 150	2 140	10	8	144	–2 579
1982	409	1 900	1 070	10	10	243	–1 491
1983	404	2 115	1 223	3	8	266	–1 711
1984	442	2 081	1 266	11	10	144	–1 639
1985	388	1 791	1 157	9	7	64	–1 403
1986	429	1 795	1 079	1	10	70	–1 366
1987	529	1 953	1 081	39	19	85	–1 424
1988	705	2 716	1 471	4	26	140	–2 011
1989	781	3 652	1 794	9	41	341	–2 871
1990	795	3 754	1 646	24	36	446	–2 959
1991	756	4 398	1 650	29	231	687	–3 642
1992	800	4 767	1 883	25	110	699	–3 967
1993	810	4 571	1 784	30	87	548	–3 761
1994	952	5 426	1 937	152	250	932	–4 474
1995	1 242	6 899	2 381	140	315	1 224	–5 657
1996	1 424	8 152	3 243	176	323	1 240	–6 728
1997	1 508	7 619	2 615	180	347	1 283	–6 111

Source: MAF, Trade Policy Division, Seoul. MAF, *Statistical Yearbook of Agriculture and Forestry, various years,* Seoul.

Annex Table I.17. **Trade**

'000 tonnes

Year[1]	1970	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Imports																
Rice[2]	541	481	580	0	0	0	0	0	0	0	0	0	0	0	115	–
Wheat	1 254	1 584	1 810	2 996	3 443	4 223	4 243	2 292	2 239	4 449	3 856	4 401	6 050	2 777	3 025	3 322
Maize	284	532	2 234	3 035	3 697	4 792	5 236	5 528	6 198	5 441	6 386	6 418	5 322	8 879	8 428	8 634
Barley	0	354	0	0	0	0	0	48	64	76	134	75	81	172	97	121
Soybean	36	61	417	885	944	1 131	1 137	932	1 092	912	1 304	1 113	1 299	1 435	1 467	1 628
Milk	0	0	0	2	0	0	0	0	0	171	70	140	131	196	475	444
Beef and veal	0	0	0	0	0	0	14	81	117	184	190	141	172	211	210	172
Pork	0	0	0	0	0	0	0	0	3	23	0	0	32	44	51	72
Poultry	n.a.	n.a.	0	0	0	0	0	0	0	0	0	0	0	7	7	18
Eggs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports																
Pork	0	0	0	0	1	4	10	15	7	5	11	15	14	18	47	57

n.a.: not available.

1. Grain: marketing years Nov./Oct. (1980 = Nov. 1979 to October 1980); livestock: calendar years.
2. There were no imports of rice during the marketing years 1995 and 1997, because the minimum access quantities, defined in calendar years, were imported after November 1995 and 1997 respectively and are therefore accounted for in marketing years 1996 and 1998.

Source: MAF Korea, Seoul.

Annex Table I.18. **Contribution of the agro-food sector to the economy**

	Units	1975	1980	1985	1990	1995	1996
Total GDP	Trillion won	10.3	38.1	82.1	179.5	352.0	390.0
Agriculture, forestry, fisheries	Trillion won	2.6	5.6	10.2	15.6	23.0	24.5
Agriculture	Trillion won	2.3	4.8	8.7	13.3	19.7	21.1
Manufacturing industries	Trillion won	2.7	10.7	24.1	52.4	94.4	100.7
Food processing industries[1]	Trillion won	0.6	2.1	3.9	6.9	10.3	11.6
Share in total GDP							
Agriculture, forestry, fisheries	%	24.9	14.7	12.5	8.7	6.5	6.3
Agriculture	%	21.9	12.5	10.6	7.4	5.6	5.4
Manufacturing industries	%	25.9	28.2	29.3	29.2	26.8	25.8
Food processing industries[1]	%	5.9	5.4	4.7	3.8	2.9	3.0
Employment	'000	11 662	13 683	14 970	18 085	20 377	20 764
Agriculture, forestry, fisheries	'000	5 339	4 654	3 733	3 237	2 541	2 405
Agriculture	'000	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Manufacturing industries	'000	2 175	2 955	3 504	4 911	4 773	4 677
Food processing industries[1, 2]	'000	145	181	191	209	n.a.	n.a.
Share in total employment							
Agriculture, forestry, fisheries	%	45.8	34.0	24.9	17.9	12.5	11.6
Agriculture	%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Manufacturing industries	%	18.7	21.6	23.4	27.2	23.4	22.5
Food processing industries[1, 2]	%	1.2	1.3	1.3	1.2	n.a.	n.a.

n.a.: not available.
1. Including tobacco.
2. OECD source.
Source: OECD, Annual National Accounts (Volume 2): Detailed Tables in Millions, July 1997. OECD, *Economic Outlook: Historical Statistics,* 1997. OECD, *Main Economic Indicators,* 1997. National Statistical Office (1997), *Major Statistics of Korean Economy 1997,* Seoul. MAF, *Statistical Yearbook of Agriculture and Forestry,* various years, Seoul. National Statistical Office, *Annual Report on the Economically Active Population Survey,* various years, Seoul. National Account, *BOK,* various years, Seoul.

Annex Table I.19. **Characteristics of food processing industries**[1]

	Units	1975	1980	1985	1990	1995	1996	1997
Total companies[2]								
Number of firms		3 865	4 595	4 637	4 654	6 232	6 239	n.a.
Number of employees	'000	134.4	168.2	185.8	207.0	201.4	197.7	n.a.
Gross sales	Billion won	1 111	3 861	7 676	14 711	22 786	29 714	n.a.
Value-added	Billion won	364	1 274	4 054	5 617	8 357	12 410	n.a.
Co-operatives[3]								
Number of firms		n.a.	n.a.	n.a.	17	170	182	n.a.
Number of employees		n.a.	n.a.	n.a.	n.a.	1 792	1 980	n.a.
Gross sales	Billion won	n.a.	n.a.	n.a.	n.a.	100	128	n.a.
Value-added	Billion won	n.a.	n.a.	n.a.	n.a.	291	345	n.a.
Share of co-operatives in total								
Number of firms	%	n.a.	n.a.	n.a.	0.4	2.7	2.9	n.a.
Number of employees	%	n.a.	n.a.	n.a.	n.a.	0.9	1.0	n.a.
Gross sales	%	n.a.	n.a.	n.a.	n.a.	0.4	0.4	n.a.
Value-added	%	n.a.	n.a.	n.a.	n.a.	3.5	2.8	n.a.

n.a.: not available.
1. Food excluding tobacco.
2. Companies with more than 5 employees.
3. Data provided by the NACF, livestock manufacturing is not included.
Source: National Statistical Office, *Report on Mining and Manufacturing Survey,* various years, Seoul.

Annex Table I.20. **Production of upstream and downstream industries, 1996**

Billion won

	Total gross sales
Upstream industries	
Fertilisers	1 143
Chemicals	623
Feedstuffs	4 189
Machinery	315
Other inputs	n.a.
Total	n.c.
Downstream industries	
Food	20 494
Grains	2 663
Bakery/noodles	3 565
Edible oils	704
Sugar and confectionary	448
Fruits and vegetables	708
Dairy	3 451
Meat	2 569
Marine products	1 860
Preparations	1 609
Others	2 917
Beverages	5 031
Total	25 525

n.a.: not available. n.c.: not computable.
Source: National Statistical Office, *Report on Mining and Manufacturing Survey 1996,* Seoul.

Annex Table I.21. **Number of co-operatives**

	1975	1980	1985	1990	1995	1996	1997
Total number of co-operatives	1 588	1 527	1 656	1 635	1 591	1 589	1 525
In the NACF	1 588	1 527	1 505	1 468	1 401	1 396	1 332
General-purpose	1 545	1 485	1 464	1 425	1 356	1 350	1 286
Specialised	43	42	41	43	45	46	46
In the NLCF[1]	n.a.	n.a.	151	167	190	193	193
General-purpose	n.a.	n.a.	137	144	146	146	146
Specialised	n.a.	n.a.	14	23	44	47	47

n.a.: not applicable.
1. The NLCF was created in 1981.
Source: NACF and NLCF.

Annex Table II.1. **Features of State trading in Korea**

State trading agency	Items	Legal basis
Ministry of Agriculture and Forestry (MAF)	Rice, barley	Food Grain Management Act
Agricultural and Fisheries Marketing Corporation (AFMC)	Beans, buckwheat, soya beans, potatoes, onions, garlic, fruits of genus capsicum, ginger, groundnuts, sesame seeds	The Act for Supply and Demand, and Price Stabilisation of Agricultural and Fisheries Products
Livestock Products Marketing Organisation (LPMO)	Beef	Livestock Farming Act
National Livestock Co-operatives Federation (NLCF)	Natural honey	Livestock Farming Act
Cheju Citrus Growers' Agricultural Co-operative	Oranges, Korean citrus fruits	Agro-Fisheries Marketing and Price Stabilisation Act
National Ginseng Co-operatives Federation	Ginseng	Ginseng Industry Act
National Forestry Co-operatives Federation	Pinenuts	Forestry Act
Korea Raw Silk Exporters Association	Raw silk (until 1997)	Sericulture Act

Source: MAF (1997), *Korean Agriculture 1997*, Seoul.

Annex Table II.2. **Administration of quota auction**

Item	Auction agency	Agency of quota management
Skim milk powder, whole milk powder, condensed milk	LPMO	Korea Dairy Industry Association
Chestnuts, jujubes	National Forestry Co-operatives Federation	National Forestry Co-operatives Federation
Sesame oil	Agricultural and Fisheries Marketing Corporation	Agricultural and Fisheries Marketing Corporation

Source: MAF (1997), *Korean Agriculture 1997*, Seoul.

Annex Table II.3. **Policy parameters for selected crops**
Rice (polished)

Marketing year (1 Nov./31 Oct.)	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
1. Production	'000 T	4 971	5 063	5 175	5 404	5 682	5 626	5 607	5 493	6 053	5 898	5 606	5 384	5 331	4 750	5 060	4.695	5.323
2. Consumption	'000 T	5 844	5 404	5 303	5 540	5 501	5 805	5 617	5 611	5 602	5 444	5 478	5 524	5 509	5 414	5 557	5.225	5.070
3. Imports	'000 T	1 109	269	216	–	–	–	–	–	–	–	–	–	–	–	–	115	–
4. Self-sufficiency ratio (= 2/1)	%	85.0	93.7	97.6	97.5	103.3	96.9	99.8	97.9	108.1	108.3	102.3	97.5	96.8	87.7	91.1	89.9	105.0
5. Purchased quantities	'000 T	1 067	915	1 091	1 219	1 215	1 090	891	788	967	1 692	1 203	1 222	1 382	1 437	1 512	1.376	1.241
6. Share of purchased quantities in total production (= 5/1)	%	20.7	18.1	21.1	22.6	21.4	19.4	15.9	14.3	16.0	28.7	21.5	22.7	25.9	30.3	29.9	29.3	23.3
7. Quantities released	'000 T	1 945	1 315	1 203	1 325	1 029	1 269	1 039	828	765	1 064	1 048	1 214	1 332	1 051	1 305	1.303	484
8. Purchase price	'000 won/T	468.1	652.0	699.6	699.6	720.6	756.6	802.0	914.2	1 060.5	1 187.8	1 329.9	1 423.0	1 508.4	1 583.8	1 583.8	1 583.8	1 647.1
9. Release price	'000 won/T	427.1	666.0	653.5	650.0	678.3	612.5	689.0	620.1	597.1	694.0	1 150.0	1 207.5	1 207.5	1 306.3	1 306.3	1 550.0	1 562.5

1. Total production in polished equivalent, all grades.
2. Total consumption in polished equivalent, all grades.
3. Imports of corresponding marketing years.
5. Total quantities purchased by the government and the NACF in polished equivalent. Until 1983 purchase included both glutinous rice and unglutinous rice. Since 1984 only unglutinous rice was purchased.
7. Total quantities released by the government and the NACF in polished equivalent. Imported rice was released from 1974 to 1984 because of domestic shortages.
8. Average government and NACF purchase price in unglutinous rice equivalent.
9. Average government and NACF release price in unglutinous rice equivalent. Weighted average of rice used for price stabilisation and for public use. The release price takes into account part of processing, transportation, insurance and packing costs. Government losses incurred during purchase and release operations are shown in Table II.4.

Source: MAF, *Statistical Yearbook of Agriculture and Forestry,* various year, Seoul; MAF, Food Grain Policy Division, Seoul.

Annex Table II.4. **The deficit of government foodgrain management programmes**

Billion won

	Rice	Barley	Other grains	Total	Cumulative deficit
1970-78	233.3	166.2	6.0	405.5	405.5
1979	185.1	28.5	4.9	218.5	624.0
1980	140.0	106.8	5.1	251.9	875.9
1981	21.8	126.8	4.5	153.1	1 029.0
1982	17.9	115.7	3.1	136.7	1 165.7
1983	259.9	85.1	8.0	353.0	1 518.7
1984	357.6	52.8	4.5	414.9	1 933.6
1985	299.4	49.0	3.4	351.8	2 285.4
1986	359.6	16.0	2.6	378.2	2 663.6
1987	316.0	17.0	–	333.0	2 996.6
1988	239.7	13.6	–	253.3	3 249.9
1989	414.5	21.1	–	435.6	3 685.5
1990	724.1	24.0	–	748.1	4 433.6
1991	1 026.2	29.8	–	1 056.0	5 489.6
1992	1 348.9	32.3	–	1 381.2	6 870.8
1993	1 787.9	51.0	–	1 838.9	8 709.7
1994[1]	1 851.5	62.9	–	1 914.4	10 624.1
1995	1 922.7	71.0	–	1 993.7	12 617.8
1996	907.2	27.8	–	935.0	13 552.8
1997	719.0	26.4	–	745.4	14 298.2
Cumulative deficit	13 132.3	1 123.8	42.1	14 298.2	

1. The Foodgrain Management Fund was abolished in 1994. From that year, data refer to the operational cost for the government of carrying out the foodgrain management programme.

Source: MAF Korea, Seoul.

Annex Table II.5. **Policy parameters for selected crops**
Barley (unhulled)

Marketing year (1 Nov./31 Oct.)	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
1. Production	'000 T	1 437	1 059	1 159	1 130	792	627	719	781	714	574	485	448	449	321	393	401	259
2. Consumption	'000 T	1 824	1 231	983	1 165	1 265	777	786	688	650	614	637	528	591	630	575	533	546
3. Imports	'000 T	–	–	–	–	–	–	–	–	48	64	76	134	75	81	172	97	121
4. Self-sufficiency ratio (= 2/1)	%	79.3	86.0	117.9	97.0	62.6	80.7	91.5	113.5	109.8	93.5	76.1	84.8	76.0	51.0	68.3	75.2	47.4
5. Purchased quantities	'000 T	726	663	796	726	498	362	479	578	521	437	392	389	323	223	319	318	163
6. Share of purchased quantities in total production (= 5/1)	%	52.9	62.6	68.7	64.2	62.9	57.7	66.6	74.0	73.0	76.1	80.8	86.8	71.9	69.5	81.2	79.3	62.9
7. Quantities released	'000 T	597	496	411	376	529	263	120	99	100	88	79	75	81	78	68	71	58
8. Purchase price	'000 won/T	291.5	388.2	441.6	441.6	450.5	475.3	487.2	536.2	589.8	648.8	713.6	785.0	839.9	881.8	925.9	925.9	925.9
9. Release price	'000 won/T	168.7	253.0	366.0	402.6	410.7	433.3	465.9	465.9	522.0	522.0	522.0	522.0	522.0	522.0	522.0	522.0	574.0

1. Total production of unhulled barley, naked barley and beer barley in unhulled equivalent, all grades.
2. Total consumption of barley for feed, food and beer use in unhulled equivalent, all grades.
5. Total quantities purchased by the government and the NACF under government schemes since 1987, in unhulled equivalent.
7. Total quantities released by the government and the NACF, in polished equivalent.
8. Average government and NACF purchase price of unhulled barley and naked barley converted in polished equivalent using the following coefficients: unhulled barley = 59%, naked barley = 68%.
9. Average government and NACF release price of unhulled barley and naked barley converted in polished equivalent using the following coefficients: unhulled barley = 59%, naked barley = 68%. The release price takes into account part of processing, transportation, insurance and packing costs. Government losses incurred during purchase and release operations are shown in Table II.4.

Source: MAF, *Statistical Yearbook of Agriculture and Forestry,* various year, Seoul; MAF, Food Grain Policy Division, Seoul.

Annex Table II.6. **Policy parameters for selected crops**
Soybeans

Marketing year (1 Nov./31 Oct.)	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
1. Production	'000 T	255	257	233	226	254	234	199	203	239	252	233	183	176	170	154	160	160
2. Consumption	'000 T	712	792	907	960	1 130	1 247	1 225	1 298	1 232	1 254	1 202	1 503	1 274	1 347	1 558	1 618	1 855
3. Imports	'000 T	456	536	724	694	885	944	1 131	1 136	932	1 092	912	1 304	1 113	1 299	1 435	1 467	1 628
4. Self-sufficiency ratio (= 2/1)	%	36.1	32.4	25.7	23.6	22.4	18.8	16.2	15.7	19.4	20.1	19.4	12.2	13.8	12.6	9.9	9.9	8.6
5. Purchased quantities	T	2 210	365	1 985	4 073	11 929	20 205	18 504	19 479	52 772	90 684	68 817	35 973	25 731	8 147	5 314	3 248	1 269
6. Share of purchased quantities in total production (= 5/1)	%	0.8	0.1	0.9	1.8	4.7	8.6	9.3	9.6	22.0	36.0	29.6	19.6	14.6	4.8	3.4	2.0	0.8
7. Quantities released	T	19 169	44	8 595	1 910	11 929	20 205	18 504	19 479	52 772	90 684	68 817	35 973	25 731	8 147	5 314	3 248	1 269
8. Purchase price	'000 won/T	448.8	696.0	746.7	746.7	769.0	807.5	856.0	1 025.3	1 128.0	1 241.0	1 241.0	1 303.0	1 365.0	1 365.0	1 365.0	1 365.0	1 433.0
9. Release price	'000 won/T	489.6	675.6	692.7	692.7	410.0	410.0	410.0	410.0	410.0	410.0	410.0	410.0	410.0	410.0	410.0	410.0	410.0

5. Total quantities purchased by the government in 1979 and by the NACF under government schemes since 1980.
7. Total quantities released by the government and the NACF, including imports and carry-over stocks from 1979 to 1981.
8. Average government and NACF purchase price, 2d grade.
9. Average government and NACF release price. The release price takes into account part of processing, transportation, insurance and packing costs. Government losses incurred during purchase and release operations are shown in Table II.4.

Source: MAF, *Statistical Yearbook of Agriculture and Forestry,* various year, Seoul; MAF, Food Grain Policy Division, Seoul.

Annex Table II.7. **Policy parameters for selected crops**
Maize

Marketing year (1 Nov./31 Oct.)	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
1. Production	'000 T	134	145	117	101	133	132	113	127	106	121	120	75	92	82	89	74	72
2. Consumption	'000 T	2 655	2 930	4 228	3 305	3 245	3 749	4 654	4 971	5 983	6 425	5 561	6 209	6 520	5 678	8 066	9 265	8 348
3. Imports	'000 T	2 490	2 814	4 167	3 223	3 035	3 697	4 792	5 236	5 528	6 198	5 441	6 386	6 418	5 322	8 879	8 428	8 634
4. Self-sufficiency ratio (= 2/1)	%	5.1	5.0	2.8	3.0	4.1	3.5	2.4	2.6	1.8	1.9	2.2	1.2	1.4	1.4	1.1	0.8	0.9
5. Purchased quantities	'000 T	50.4	47.8	58.1	51.6	58.0	68.2	51.0	65.0	62.4	93.2	66.4	30.7	32.0	29.4	23.9	15.1	13.3
6. Share of purchased quantities in total production (= 5/1)	%	36.9	32.9	49.6	51.3	43.5	51.8	45.0	51.0	58.9	77.3	55.4	41.1	34.7	35.9	27.0	20.3	18.5
7. Quantities released	'000 T	50.4	47.8	58.1	51.6	58.0	68.2	51.0	65.0	62.4	93.2	66.4	30.7	32.0	29.4	23.9	15.1	13.3
8. Purchase price	'000 won/T	183.2	233.0	250.0	250.0	258.0	270.5	286.8	327.0	373.0	413.8	414.0	434.8	455.0	455.0	455.0	455.0	478.0
9. Release price	'000 won/T	183.2	233.0	250.0	250.0	258.0	270.5	286.8	327.0	373.0	413.8	414.0	434.8	455.0	455.0	455.0	455.0	478.0

1. Total production, all grades.
2. Total consumption for feed and food use.
5. Total quantities purchased by the NACF under government schemes.
7. Total quantities released by the government and the NACF.
8. Average government and NACF purchase price.
9. Average government and NACF release price. The release price takes into account part of processing, transportation, insurance and packing costs. Government losses incurred during purchase and release operations are shown in Table II.4.

Source: MAF, *Statistical Yearbook of Agriculture and Forestry,* various year, Seoul; MAF, Food Grain Policy Division, Seoul.

Annex Table II.8. **Policy parameters for selected crops**
Wheat

Marketing year (1 Nov./31 Oct.)	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
1. Production	'000 T	64	66	112	17	11	5	4	2	1	1	1	1	1	2	10	11	7
2. Consumption	'000 T	1 921	1 950	1 924	2 720	2 988	3 315	4 129	4 198	2 602	2 005	4 228	4 056	3 981	6 058	3 335	2 882	3 301
3. Imports	'000 T	1 852	1 940	1 861	2 648	2 996	3 443	4 223	4 243	2 292	2 239	4 449	3 856	4 401	6 050	2 777	3 025	3 322
4. Self-sufficiency ratio (= 2/1)	%	3.3	3.4	5.8	0.6	0.4	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.2
5. Purchased quantities	T	42 554	50 233	103 225	–	–	–	–	–	–	–	–	–	–	–	–	–	–
6. Share of purchased quantities in total production (= 5/1)	%	63.2	76.3	92.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–
7. Quantities released	T	103 042	116 648	53 000	99 000	–	–	–	–	–	–	–	–	–	–	–	–	–
8. Purchase price	'000 won/T	261.0	338.8	338.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–
9. Release price	'000 won/T	258.5	345.4	405.1	416.2	–	–	–	–	–	–	–	–	–	–	–	–	–

1. Total production, all grades.
2. Total consumption for food use, all grades.
5. Total quantities purchased by the government.
7. Total quantities released by the government and the NACF, including imports and carry-over stocks.
8. Average government and NACF purchase price, 2d grade.
9. Average government and NACF release price. The release price takes into account part of processing, transportation, insurance and packing costs. Government losses incurred during purchase and release operations are shown in Table II.4.

Source: MAF, *Statistical Yearbook of Agriculture and Forestry,* various year, Seoul; MAF, Food Grain Policy Division, Seoul.

Annex Table II.9. **Price stabilisation operations for vegetables, 1990-96**

	Units	1990	1991	1992	1993	1994	1995	1996
Radish and Chinese cabbage								
Production (A)	'000 tonnes	5 134	4 290	3 922	5 331	4 282	4 320	4 726
Purchase (B)	'000 tonnes	23	73	51	243	33	4	109
B/A	%	0.4	1.7	1.3	4.6	0.8	0.1	2.3
Expenditure of the Fund	Million won	1 433	4 900	5 977	9 175	5 371	173	5 362
Red pepper								
Production (A)	'000 tonnes	133	141	172	187	176	193	218
Purchase (B)	'000 tonnes	4	–	–	8	–	–	–
B/A	%	2.6	–	–	4.1	–	–	–
Expenditure of the Fund	Million won	15 204	–	–	35 769	–	–	–
Garlic								
Production (A)	'000 tonnes	417	481	465	393	362	462	456
Purchase (B)	'000 tonnes	3	20	23	4	–	15	1
B/A	%	0.8	4.1	4.9	1.1	–	3.2	0.2
Expenditure of the Fund	Million won	3 933	20 069	24 322	4 793	–	16 759	1 234
Onions								
Production (A)	'000 tonnes	407	530	810	556	541	975	579
Purchase (B)	'000 tonnes	4	0	21	–	–	43	–
B/A	%	1.1	0.1	2.6	–	–	4.4	–
Expenditure of the Fund	Million won	1 108	109	3 250	–	–	8 150	–
Total expenditure of the Fund		21 678	25 078	33 549	49 737	5 371	25 082	6 596

Source: MAF, Fruit and Vegetable Division, Seoul.

Annex Table II.10. **Livestock product balances**

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Beef and veal																		
Production	'000 tonnes	119	88	94	130	167	215	213	181	129	136	141	142	185	210	221	248	339
Consumption	'000 tonnes	146	152	165	152	172	211	217	202	205	253	319	324	333	385	430	461	520
Imports	'000 tonnes	27	59	72	35	0	0	0	14	81	117	184	190	141	172	211	210	217
Self-sufficiency ratio	%	81	58	57	86	97	102	98	90	63	54	44	44	56	55	51	54	65
Pigmeat																		
Production	'000 tonnes	285	305	378	437	443	412	483	554	622	649	640	771	793	796	820	887	896
Consumption	'000 tonnes	289	305	378	435	444	411	478	545	605	647	655	750	786	811	848	894	895
Imports	'000 tonnes	3	0	0	0	0	0	0	0	0	3	23	0	0	32	44	50	79
Self-sufficiency ratio	%	99	100	100	100	100	100	101	102	103	100	98	103	101	98	97	99	100
Chickenmeat																		
Production	'000 tonnes	129	141	171	168	180	185	201	213	221	245	295	338	342	347	376	395	371
Consumption	'000 tonnes	129	142	171	168	180	185	201	213	221	245	295	331	344	349	383	403	399
Imports	'000 tonnes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	14	24
Self-sufficiency ratio	%	100	99	100	100	100	100	100	100	100	100	100	102	99	99	98	98	93
Sheepmeat																		
Production	'000 tonnes	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Consumption	'000 tonnes	8	4	5	2	6	4	6	12	12	9	7	13	9	8	10	7	6
Imports	'000 tonnes	20	9	11	10	15	14	16	26	26	23	18	25	17	14	15	12	9
Self-sufficiency ratio	%	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Wool																		
Production	'000 tonnes	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Consumption	'000 tonnes	25	29	30	27	31	38	44	37	34	34	38	38	35	40	36	27	22
Imports	'000 tonnes																	
Self-sufficiency ratio	%	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Eggs																		
Production	'000 tonnes	242	248	271	272	296	332	362	397	381	393	422	424	447	440	454	470	478
Consumption	'000 tonnes	242	248	271	272	296	332	362	397	381	393	422	424	445	442	454	470	477
Imports	'000 tonnes	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Self-sufficiency ratio	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Milk																		
Production	'000 tonnes	449	576	712	841	1 006	1 154	1 413	1 632	1 762	1 752	1 741	1 817	1 858	1 917	1 998	2 034	1 984
Consumption	'000 tonnes	448	593	729	834	972	1 162	1 425	1 652	1 642	1 879	1 869	1 920	1 984	2 078	2 144	2 465	2 440
Imports	'000 tonnes	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Self-sufficiency ratio	%	101	97	98	101	103	99	99	99	107	93	93	95	94	92	93	83	81

Source: MAF, Livestock Division, Seoul.

Annex Table II.11. **Beef import commitments**

	Quota amount (tonnes)	Duty (%)	Mark-up (%)	SBS[1] (%)	Current imports (tonnes)
1993	99 000	20.0	100	10	141 000
1994	106 000	20.0	95	20	172 000
1995	123 000	43.6	70	30	211 000
1996	147 000	43.2	60	40	210 000
1997	167 000	42.8	40	50	217 000
1998	187 000	42.4	20	60	n.a.
1999	206 000	42.0	10	70	n.a.
2 000	225 000	41.6	0	–	n.a.
2 001	–	41.2	0	–	n.a.
2 002	–	40.8	0	–	n.a.
2 003	–	40.4	0	–	n.a.
2 004	–	40.0	0	–	n.a.

n.a.: not available.
1. Simultaneous Buy/Sell.
Source: Kim Jae Soo (1994), *Korean Agriculture in the 1990s,* MAFF, Seoul.

Annex Table II.12. **Market access commitments for selected commodities by Korea**

	In-quota (Tonnes) (In-quota tariff rates, %)[a]			Tariffs/TEs (Over-quota tariff rates)		
	Initial	Final	Implementation period	Base rate	Bound rate	Reduction rate (%)
Rice[1]	51 307 *5%* 102 614 *5%*	102 614 *5%* 205 228 *5%*	1995-1999 2000-2004	Special treatment (not tariffied and not bound)		
Barley[2]	14 150 *20%*	23 582 *20%*	1995-2004	333% or	299.7% or 401 won/kg	10 361 won/kg
Soybean[3]	1 032 152 *5%*	1 032 152 *5%*	1995-2004	541% or	487% or 1 062 won/kg	10 956 won/kg
Maize[4]	6 102 100 *3%*	6 102 100 *3%*	1995-2004	365%	328%	10
Wheat[5]	Tariff only since 1990			10%	1.8%	92
Beef[6]	123 000 *43.6%*	225 000 *41.6%*	1995-2000	44.5%	40%	10
Pork[7]	21 930 *25%*	18 275 *25%*	1995-1997.6[b]	37%	25%	18.9
Chicken[8]	7 700 *20%*	6 500 *20%*	1995-1997.6[b]	35%	20%	42.9
Skim milk powder[9]	621 *20%*	1 034 *20%*	1995-2004	220%	176%	20
Whole milk powder	344 *40%*	573 *40%*	1995-2004	220%	176%	20
Whey powder	23 000 *20%*	54 233 *20%*	1995-2004	99%	49.5%	50
Butter	250 *40%*	420 *40%*	1995-2004	99%	89%	10
Oranges[10]	15 000 *50%*	57 017 *50%*	1995-2004	99% or	50% or 1 015 won/kg	50 513 won/kg
Red-pepper[11]	4 311 *50%*	7 185 *50%*	1995-2004	300% or	270% or 6 900 won/kg	10 6 210 won/kg
Garlic	8 680 *50%*	14 467 *50%*	1995-2004	400% or	360% or 2 000 won/kg	10 1 800 won/kg
Onions	12 369 *50%*	20 645 *50%*	1995-2004	150% or	135% or 200 won/kg	10 180 won/kg
Potatoes[12]	11 286 *30%*	18 810 *30%*	1995-2004	338%	304%	10
Sweet potatoes[13]	11 121 *20%*	18 535 *20%*	1995-2004	428% or	385% or 375 won/kg	10 388 won/kg
Sesame	6 731 *40%*	6 731 *40%*	1995-2004	700% or	630% or 7 400 won/kg	10 6 630 won/kg
Ginseng	34.1 *20%*	56.8 *20%*	1995-2004	Red 838.1% White 247.6%	754.3% 222.8%	10 10

1. Rice: Not tariffied (special treatment). In-quota represents minimum access opportunities (on a nonglutinous milled rice basis).
2. Barley: Tariffied (TE on a naked barley basis). In-quota represents minimum access opportunities (on a unhulled barley basis).
3. Soybeans: Tariffied. In-quota represents current market access opportunities.
4. Maize: Tariffied. In-quota represents current market access opportunities (on a feeding maize basis).
5. Wheat: Fully liberalised since 1990.
6. Beef: Initial tariff has been increased from the existing 20 per cent of bound rate to 43.6 per cent in 1995. Removal of import restrictions from January 1, 2001. In-quota represents import quota (retail weight equvalent basis).
7. Pork: Initial tariff has been increased from the existing 25 per cent of bound rate to 35.8 per cent in 1995. Removal of import restrictions from July 1, 1997. In-quota represents import quota (frozen pork basis).
8. Chicken: Initial tariff has been increased from the existing 20 per cent of bound rate to 33.5 in 1995 per cent. Removal of import restrictions from July 1, 1997. In-quota represents import quota (frozen chicken basis).
9. SMP (Skim milk powder): Ceiling binding. Removal of import restrictions from July 1, 1995. In-quota represents tariff quota.
10. Oranges: Ceiling binding. Removal of import restrictions from July 1, 1977. In-quota represents import quota (from January 1995 through June 1997) and tariff quota (from July 1997 over the implementation period).
11. Red-pepper, garlic, onions: Ceiling bindings. Removal of import restrictions from July 1, 1995. In-quota represents tariff quota.
12. Potato: Tariffied. In-quota represents minimum access opportunities (excluding seeds).
13. Sweet potato: Tariffied. In-quota represents minimum access opportunities (on a fresh sweet potato basis).

a) Where both *ad valorem* tariff and specific tariff are reported whichever is the greater will be applied.
b) The final in-quota volumes for pork and chicken represent amounts for January through June in the final year, respectively.
Source: Korea's GATT Schedule and various internal documents of MAF, Korea.

Annex Table III.1. **Transfers associated with agricultural policies**

	1986-88	1996	1997p	% change[1] 1986-88 to 1997	% change[1] 1996 to 1997
Producer Subsidy Equivalent (PSE)[2]					
Total PSE					
Billion won	6 357	12 198	11 961	88.2	–1.9
Million US$	7 963	15 156	12 576	57.9	–17.0
Percentage PSE	72	78	75		
Producer Nominal Assistance Coefficient	3.3	3.5	3.2		
Consumer Subsidy Equivalent (CSE)[2]					
Total CSE					
Billion won	–6 174	–11 713	–10 396	68.4	–11.2
Million US$	–7 714	–14 555	–10 931	41.7	–24.9
Percentage CSE	–60	–59	–53		
Consumer Nominal Assistance Coefficient	2.5	2.4	2.2		
Total transfers[3]					
Billion won	10 851	23 477	22 629	108.5	–3.6
Million US$	13 582	29 171	23 792	75.2	–18.4
Memorandum item:					
GDP (Billion US$)	142	485	443		
GDP deflator (national currency)	100	178	183		

p: provisional.
1. Percentage changes in the PSE and CSE totals and total transfers have been calculated from unrounded data; all monetary values are in nominal terms.
2. Calculated for a common set of 13 agricultural commodities (see Annex III).
3. Total transfers are **not** the addition of the PSE and CSE; they cover the total value of production and include not only transfers to agriculture, as measured by the PSE and CSE, but also other transfers associated with agricultural policies (see Annex III).

Source: Tables 15, 16, Annex III and Table III.2, Annex I.

Annex Table III.2. **Total transfers, 1979-97**

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
1. Share of PSE commodities	%	62	66	70	67	64	65	64	62	61	61	58	57	56	53	50	56	55
2. Total CSE	Won bn	3 189	4 351	4 851	4 830	5 136	5 585	5 917	7 021	7 630	8 701	9 410	9 924	10 127	10 303	12 080	11 713	10 396
3. Budget revenues in Total CSE	Won bn	724	715	687	388	373	451	428	414	631	881	1 340	1 534	1 969	1 726	2 764	1 529	1 108
4. Transfers from taxpayers	Won bn	1 354	1 548	1 453	1 782	1 670	1 677	1 626	1 997	2 734	3 534	3 600	3 883	4 211	4 395	4 898	5 302	5 817
5. Transfers from consumers (2)/(1)	Won bn	5 174	6 624	6 957	7 176	8 006	8 608	9 315	11 371	12 510	14 323	16 265	17 322	18 168	19 620	24 132	20 904	18 816
6. Total budget revenues (3)/(1)	Won bn	1 191	1 088	985	576	581	695	674	671	1 035	1 450	2 316	2 677	3 532	3 286	5 521	2 729	2 005
Total transfers																		
In billion won (4) + (5) – (6)	Won bn	5 337	7 084	7 425	8 383	9 095	9 590	10 267	12 696	14 209	16 407	17 549	18 527	18 846	20 729	23 510	23 477	22 629
In billion US$	US$ bn	9	10	10	10	10	11	12	17	21	23	24	24	23	26	30	29	24
7. Share of total GDP	%	14	13	12	11	11	10	9	10	10	9	8	8	7	7	7	6	5
8. Per capita	US$ per capita	237	246	240	257	256	264	300	413	499	541	553	542	531	578	676	640	517

p: provisional.
1. Share of PSE commodities in total value of agricultural production in Korea (OECD PSE/CSE database).
2., 3. Table 13, Annex III.
4. Table III.3, Annex I.
5. Total CSE extrapolated to apply to the total value of agricultural production.
6. Budget revenues from import tariffs extrapolated to apply to the total value of agricultural production.
7. GDP: OECD Economic Outlook database.
8. Korean population: OECD Economic Outlook database.
Source: OECD Secretariat, 1998.

Annex Table III.3. **Transfers from taxpayers, 1979-97**

Billion won

	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
Total budget transfers	1 354	1 548	1 453	1 782	1 670	1 677	1 626	1 997	2 734	3 534	3 600	3 883	4 211	4 395	4 898	5 302	5 817
Direct payments	24	0	13	1	20	14	41	16	26	253	275	313	259	282	229	217	169
Deficiency payments	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Area and headage payments	2	0	1	1	0	0	0	0	0	0	0	0	6	10	12	9	11
Disaster payments	21	0	12	0	0	0	26	7	4	8	0	9	12	66	25	11	0
Diversion payments	0	0	0	0	0	0	0	0	9	1	3	1	0	0	0	0	1
Alleviation of debts	0	0	0	0	19	1	15	9	12	16	18	13	12	9	9	7	7
Direct household income payments	0	0	0	0	0	12	0	0	0	228	253	290	229	198	183	190	151
Reduction of input costs	21	29	23	37	24	28	69	129	200	292	350	432	530	686	851	904	981
Capital grants	4	11	9	10	10	9	12	16	26	31	54	60	140	199	298	283	251
Interest concessions	8	6	4	6	5	4	21	70	76	163	187	222	210	246	290	288	381
Fertilisers	0	0	0	0	0	0	0	0	13	8	6	34	44	55	28	56	87
Irrigation	0	0	0	0	0	0	0	34	67	70	78	85	85	95	102	106	109
Pesticides	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grass	1	4	4	5	3	3	4	2	3	3	1	3	13	7	1	0	13
Breeding improvements	1	3	3	4	4	2	2	2	2	1	1	1	1	1	0	0	0
Seeds	2	–2	–1	7	–1	6	24	0	6	8	0	–1	3	1	1	6	4
Input subsidies for non PSE commodities	6	5	3	4	4	5	6	5	7	8	22	29	35	82	131	166	136
General services	201	261	284	335	312	375	448	485	608	681	799	864	983	1 186	1 743	2 280	2 679
Research, education, training	22	33	39	40	45	47	52	64	75	97	125	158	182	208	331	328	321
Inspection	7	10	10	11	12	14	15	20	22	23	28	32	35	38	42	53	58
Pest and disease control	3	5	6	5	9	11	7	7	8	11	14	15	20	20	24	44	37
Structure/infrastructure	170	213	228	280	246	303	375	394	502	546	632	657	745	914	1 340	1 839	2 250
Marketing/promotion	0	0	0	0	0	0	0	0	1	3	2	3	1	5	5	17	13
Wholesale subsidies	18	10	10	15	34	55	75	48	54	82	162	133	231	274	317	148	315
Public stockholding	1 082	1 235	1 108	1 376	1 260	1 195	984	1 308	1 828	2 208	1 979	2 031	2 094	1 814	1 555	1 466	1 439
Assistance to downstream industries	5	11	15	18	19	10	10	10	17	15	32	103	108	145	194	262	196
Assistance to upstream industries	3	1	0	0	1	1	1	1	1	3	5	6	6	8	9	25	38

p: provisional.
Source: MAF Korea, Seoul.

Annex II

REGULATORY REFORMS AFFECTING AGRICULTURE, 1993-1997

A. Regulatory reform related to farmland

Since April 1994 local governors (the head of the city or county) have wider powers to authorise a change in the use of farmland. In the past this authority applied to a maximum of 1 500 square meters in the case of a diversion from farming to industrial use but has now been increased to 10 000 square meters. The increase for diversion to agro-fishery facilities is from 3 300 to 7 000 square meters and while, in the past, local governors had no authority to allow farmland to be diverted to experimental agro-fishery research facilities, they may now authorise diversion of up to 7 000 square meters.

Since January 1996, agricultural companies may own farmland. Before that date ownership of farmland was confined to farmers actually working the land. This regulation was a serious impediment to farm enlargement and acted as a barrier to investment.

Since January 1996 a person wanting to acquire farmland is no longer required to have lived in the administrative area in which the land is situated for at least six months prior to acquiring the land.

Since December 1994, there has been some easing in the regulations affecting the maximum amount of farmland that could be held by an individual or co-operative. Strict regulations had been in place in order to prevent speculation. Within the Agricultural Promotion Zone the amount of land held by a farm household was limited to between 10 and 20 hectares and by a co-operative to 10 hectares per member. There is now no limit. Outside the Agricultural Promotion Zone where an individual farm was limited to a maximum 3 hectares and a co-operative farm to 3 hectares per member. The farm size can be increased to 5 hectare when it is deemed necessary to have a large farm size to improve agricultural productivity and to use farmland efficiently.

B. Regulatory reforms related to the foodgrain sector

In 1994 the licensing requirement in order to sell foodgrain was replaced by a reporting requirement and in 1997 the minimum packaging size above which rice sold on the market has to be reported to the government was increased from 5 to 20 kilograms.

Since June 1995 Rice Processing Centres of less than 10 000 square meters can be established in the Agricultural Promotion Zone.

In January 1995 the licensing requirement for foodgrain polishing (milling) was replaced by a registering requirement.

C. Regulatory reforms related to agricultural inputs

Agricultural chemicals

In November 1994 the government license system for chemical manufacturing and/or importing was replaced by a registration system.

In May 1993 a research institute attached to private companies was allowed to test chemicals while the Rural Development Administration also retains this authority.

Fertilisers

In December 1995 the government license system for fertiliser manufacturing was replaced by a registration system and the registration system for sales was replaced by a reporting requirement.

In November 1994 the smallest package size was reduced to 20 kilograms from 25 kilograms to allow them to be carried more easily be older and by female farmers.

Agricultural machinery

In November 1994 the compulsory inspection system and the upper price limit on agricultural machinery were abolished.

D. Regulatory reforms related to marketing

The requirement that agro-fishery products to be sold in the wholesale market area should pass through the wholesale market channels established by law has been alleviated and will apply only where it is strictly necessary.

The government license system for food manufacturing and processing business has been replaced by a reporting requirement and the system of licensing of manufacturing of each food item has been abolished. This has facilitated the participation of farmer and farmers' organisations in agro-food manufacturing and processing.

The minimum size requirement for premises involved in the manufacture of traditional foods has been relaxed. It used to be 330 square meters but the appropriate size may now be set by the local governor (head of city or county) according to the local situation.

E. Regulatory reforms related to horticulture and special crops

Since April 1994, the number of standard models of automated greenhouse eligible for government support has been increased from 3 to 13 and approval for non-standard types may be granted by the provincial governor and is no longer required from the Ministry of Agriculture.

Since December 1994 the government license system for seedling production has been replaced by a registration system and the registration system for seedling sales has been replaced by a reporting requirement. At the same date, the requirements that vegetable seed for sale should be produced in the designated area and that imported vegetable seed should be marked with an import stamp have been abolished.

F. Regulatory reforms related to livestock

Dairy

The mandatory insurance program for dairy cattle, the registration system of dairy cattle and the limit of dairy farming size in the dairy farming area have been abolished.

A Dairy Promotion Board has been set up: the specification and price of raw milk will no longer be set by the government but will be decided by the Board after negotiations with representatives of farmers and processing companies, (the Act was revised in 1997, but will be effective in 1999).

Animal Feed

The government license system for feed manufacturing was replaced by a registration system in December 1994 and the reporting system for feed sales was abolished.

G. Regulatory reform of food safety and inspection services

Shelf-life

Korea has maintained a food shelf-life system in which the government prescribes the effective shelf life for each product . The specific shelf-life of each product was prescribed in the Food Code which is based on the Food Sanitary Act. However, the Shelf-Life Determined by the Government (GDSL) had not kept pace with developments in the rapidly changing food industry and the system resulted in unnecessary, over-regulation and hindered the healthy development of the industry.

Having recognised this problem, the government tried to change shelf-life system from GDSL to the Shelf-Life Determined by the Manufacturer (MDSL). The government attempted to reconcile different factors such as food safety and technological developments in food processing in designing the regulatory change. It was decided to introduce MDSL gradually, starting with dried foods with relatively long shelf-life before tackling perishable foods with relatively short shelf-life.

The MDSL scheme was made public in April 1996. Of 346 food items 261 items had came under the MDSL system by 30 June 1996 and a further 64 items will be included by 1998. For the remaining 21 items, the government will review the possibility of introducing MDSL after 1998.

The revision of the Plant Protection Act

The Plant Protection Act (PPA), which is the framework law governing plant quarantine, was, to some extent, not consistent with the agreement on Sanitary and Phytosanitary Measures of the WTO or with the IPPC (International Plant Protection Convention). Thus, the government revised the PPA in December 1996, to harmonise the quarantine standard with the international standard recommended or set by these international organisations.

Before the revision of the PPA, quarantine was required for all pests and diseases irrespective of whether such pests and diseases already occur in Korea. This meant that the relevant SPS measures were going beyond what could be justified to protect plant life. Following the revision of the PPA quarantine is limited to pests and diseases (called quarantine pests) which do not occur domestically or which occur only in a limited area and is subject to completion of a Pest Risk Analysis (PRA). Accordingly, the mandatory sorting requirement which obliges to sort agro-food products spoiled by non-quarantine pests was abolished. The PRA procedures followed are based on sound science and are in conformity with the international standard for such procedures set by the IPPC

Under the normal system plant quarantine is applied only at the time of customs clearance. An on-the-spot quarantine system has now been introduced. Under the on-the spot system quarantine may be applied in the exporting country before dispatch to Korea if the exporting country requests it. This system should significantly expedite customs clearance at the import point and had been requested repeatedly in the past by countries exporting to Korea.

Quality and safety of agro-fishery products

In 1996 the government established the Plan for Quality and Safety Improvement, with a view to improving the quality and safety of the production and marketing of agro-fishery products. A legal basis for inspection for food safety was established by the “Act for the Development of Agro-Fishery Processing Industries and Quality Management”. Since August 1996, inspection for safety has been carried out at the production stage under the authority of this law and multiple inspection points have been set up at various stages of production and storage. In addition, measures aimed at improving quality have been introduced including a government quality certification system, a “marks of origin” system and beef grading by cut has been introduced.

Annex III

ASSISTANCE TO KOREAN AGRICULTURE, 1979-97

Introduction

This Annex contains three Sections. Section A presents the basic concepts of the PSE, CSE and Total Transfers and the general methodology used to calculate them and to decompose PSEs and CSEs. The main assumptions made in estimating the Korean PSEs, CSEs and Total Transfers are explained in Section B while Section C contains the PSE and CSE calculation tables,[1] including detailed notes on definitions and sources used for the calculations.

A. PSE/CSE concept and methodology

1. PSE/CSE concept

The PSE is an indicator of the value of the monetary transfers to agriculture resulting from agricultural policies in a given year. Both transfers from consumers of agricultural products (through domestic market prices) and transfers from taxpayers (through budgetary or tax expenditures) are included. Five categories of agricultural policy measures are included in the OECD's calculations of PSEs:

- measures that transfer money to producers through affecting producer and consumer prices simultaneously, such as support prices and trade measures **(market price support)**;
- measures that transfer money directly from taxpayers to producers without raising prices to consumers, such as per tonne payments, area payments, and disaster payments **(direct payments)**;
- measures that transfer money to producers through lowering input costs, such as interest concessions and farm input subsidies **(reduction of input costs);**
- measures that reduce the costs to the agricultural sector as a whole through transfers that are not received directly by producers, such as research, advisory, training, inspection, pest and disease control, structure and infrastructure improvement, and marketing and promotion **(general services);**
- other measures, the main elements of which are **sub-national,** such as measures funded by state or provincial governments, and certain tax concessions **(other support).**

All these categories of support measures (which are discussed in Chapter II) have been included in the PSE calculations for Korea, except tax concessions, due to the lack of data.

The market price support (***MPS***) is generally estimated for each commodity by taking the difference between the price paid to domestic producers (at the farmgate) and the corresponding world market price at the Korean border (the **reference price)**, and multiplying this price difference by the quantity produced. Because this price gap is the result of various, often interacting domestic and border measures taken to support market prices, it is not, however, possible (nor necessary) to estimate their separate contributions.

For the other four categories of support measures the amount of subsidy for the calculation of the PSE is the budget cost of the measures applied. The calculation of the PSE consists of allocating among the various commodities the budgetary expenditures due to each of the measures. The distribution method used in each case depends on how the measure is applied (and to which commodities if relevant), but if it is not possible to ascribe a specific basis for allocating the expenditure, allocation is done according to the share of each commodity in final agricultural output.

The PSE calculations include not only all the transfers to domestic producers that specifically result from the categories of policy measures indicated above, but also, if appropriate, **producer levies** on output, as negative transfers. In addition, if there is a MPS on grains, livestock producers pay an implicit tax on any feed that uses these grains as ingredients. Thus, when calculating the aggregate PSEs for all commodities the support is counted twice: firstly, directly under the feedgrains PSEs and secondly, indirectly under the livestock PSEs. To avoid double-counting a **Feed Adjustment** corresponding to the value of market price support for crops used in animal feed is deducted from effective support received by each livestock product. Accordingly, the term **Gross PSE** is used when referring to transfers to producers before the deduction of the feed adjustment, whereas the **Net PSE** is used when referring to transfers to producers after deduction of the feed adjustment.

The PSE is expressed in four ways:

– **total PSE:** the total value of transfers to producers;
– **percentage PSE:** the total value of transfers as a percentage of the total value of production (valued at domestic producer prices), adjusted to include direct payments and to exclude levies on production;
– **unit PSE:** the total value of transfers per tonne produced;
– **producer nominal assistance coefficient:** the ratio of the border price plus the unit PSE to the border price.

In algebraic form, these PSE expressions are written as:

gross total PSE: $Q \cdot (P - PW_{nc}) + DP - LV + OS$

net total PSE: $Q \cdot (P - PW_{nc}) + DP - LV + OS - FA$

unit PSE: $PSE_u = PSE/Q$

percentage PSE: $\%PSE = 100 \cdot PSE/(Q \cdot P + DP - LV)$

producer nominal assistance coefficient: $NAC_p = \frac{PW_{nc} + PSE_u}{PW_{nc}} = 1 + \frac{PSE_u}{PW_{nc}}$

where,

Q refers to the volume of production;

P refers to the domestic producer price;

PW_{nc} is the world price (reference price) at the border in domestic currency;

LV refers to direct payments;

DP refers to levies on production;

OS refers to all other budget financed support; and

FA refers to the feed adjustment (only for livestock products).

The CSE is an indicator of the value of the monetary transfers to consumers resulting from agricultural policies in a given year. Two categories of agricultural policy measures are included in the OECD calculations of CSEs:

– transfers to (if positive), or more commonly from (if negative), consumers due to market price support policies, plus estimated budget revenues from tariffs on agricultural imports **(market transfers);**
– budgetary transfers to consumers resulting from agricultural policies, such as consumer subsidies **(other transfers).**

Normally, "market transfers" are negative and are larger in absolute terms than "other transfers"; in such cases the C.SE can be thought of as the implicit tax imposed on consumers by agricultural policies.

Like the PSE, the CSE is also expressed in four ways:

– **total CSE:** the total value of transfers to consumers, including transfers such as consumer subsidies;
– **percentage CSE:** the total value of transfers as a percentage of the total value of consumption (valued at producer prices);
– **unit CSE:** the total value of transfers per tonne consumed;

– **consumer nominal assistance coefficient:** the ratio of the border price plus the unit CSE to the border price.

In algebraic form, these CSE expressions, as measured by the OECD, are written as:

total CSE: $CSE = Q_c \cdot (PW_{nc} - P) + OT$

unit CSE: $CSE_u = CSE/Q_c$

percentage CSE: $\%CSE = 100 \cdot CSE/(Q_c \cdot P)$

consumer nominal assistance coefficient: $NAC_c = \frac{PW_{nc} + CSE_u}{PW_{nc}} = 1 + \frac{CSE_u}{PW_{nc}}$

where,

Q_c refers to the volume of consumption,

AT refers to budgetary subsidies to consumers resulting from agricultural policies,

and other parameters are the same as those used in the PSE expressions.

There is thus a very close relationship between the PSE and CSE indicators. All market price support policies that create a wedge between domestic and world prices raise consumer prices: a positive (negative) transfer from consumers to producers is equivalent to a subsidy (tax) to producers and a tax (subsidy) on consumption. Specific consumer subsidies paid from government budgets, such as food subsidies, may partly offset such taxes on consumption. Direct payments and other budgetary support paid to producers raise the effective price received by producers, but do not raise the price paid by consumers.

Both PSE and CSE are calculated at the farmgate level and the price received by farmers is the price paid by consumers at the first level of consumption. Thus, "consumption" means the first use (including on the farm) or purchase of the commodity concerned, and "consumers" means all those (including farmers) who use the commodity for the first time. The consumption price at the farmgate is thus the producer price, except when the level of consumption is larger than the level of production and the level of market price support on the quantities imported is different from the one on domestic production.

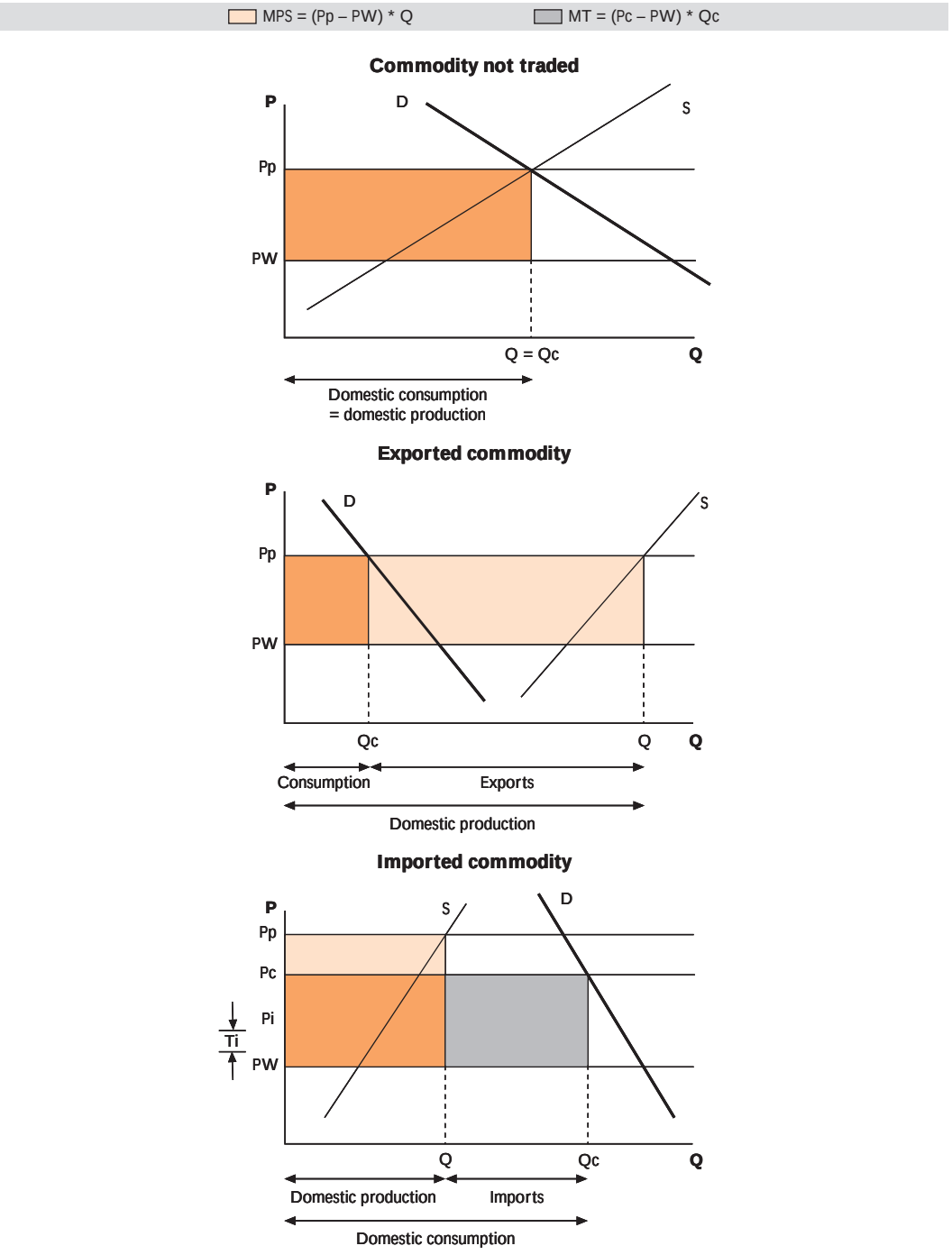
Nominal assistance coefficients (NACs) are indicators of the effective price wedges created by agricultural policies. The larger these effective price wedges, the greater are the distortions in production and consumption that stem from them.[2] A NAC equal to one indicates, *prima facie*, that domestic prices are not insulated from world prices. As the size of the wedge increases, the NAC increases in proportion: a NAC of 2.0 implies that the effective producer (or consumer) price is twice the world price, a NAC_p of 3 implies triple the world price, and so on (see Tables 15 and 16, in this Annex). The advantage of using the NAC in this way as an indicator of the effective price wedge on the production side, rather than the percentage PSE, is that the percentage PSE measures transfers relative to the gross revenue of producers, but inadequately indicates the price relativities that are the key determinants of the production and trade effects associated with such transfers. Thus, the percentage PSE obscures the extent of the wedge between domestic and border prices and hence the degree of possible distortion in production.

Caution should be exercised in the interpretation of the producer NAC as an indicator of the insulation of domestic producer prices from border prices, insofar as the producer NAC also includes measures that are not received directly by producers, such as research and development. However, in most countries, market price support and direct payments received directly by farmers (based on output) are overwhelmingly the predominant form of assistance; thus the extent of bias is likely to be small. However, the consumer NAC is a better indicator of the degree of domestic price insulation, as it essentially includes market transfers in the calculations.

2. MPS calculation method

Graph I illustrates, in simplified form, the basic concept behind the various price support measures, with a view to explain the general PSE/CSE calculation associated with these measures. The diagram represents three possible trading positions: where domestic production equals domestic consumption at given prices and no trade is assumed to take place; where domestic production exceeds domestic consumption and there are net exports; and where domestic consumption exceeds domestic production and

◆ Graph 1. ***Market price support and market transfers***



Pp = Producer price	PW = World price	Pc = Consumer price
Pi = Import price	Q = Quantity produced	Qc = Quantity consumed
Ti = Import tariff	MPS = Market price support	TM = Market transfers

Source: OECD Secretariat, 1997.

there are net imports. In Korea, all these three situations have existed for some commodities and in some years, although for most PSE commodities, Korea is a net importer.

For each commodity the graph depicts the world market price or reference price (PW) and the producer price (Pp). The relative position of supply (S) and demand (D) curves show whether at certain producer price (Pp) levels domestic supply (Q) is greater, equal or below domestic demand (Qc). The difference between the two (Qc – Q) is imported or exported (if negative). The calculation of market price support received by producers (MPS) and market transfers paid by consumers resulting from price support and trade measures (MT) is expressed in the graph as well. Market price support is simply the gap between producer price (Pp) and reference price (PW) multiplied by the quantity produced (Q), irrespective of the country's trading position.

For exported commodities and commodities for which there is no trade, market transfers from consumers are assumed to be the price gap (Pp – PW) multiplied by the quantity consumed (Qc). For those imported commodities that are subject to an import tariff lower than (Pp – PW), the consumer price (Pc) is assumed to be the weighted average of the producer price (Pp) and the import price (Pi), the latter being defined as the reference price (PW) plus the import tariff (Ti). In that case, market transfers from consumers are assumed to be the price gap (Pc – PW) times the quantity consumed (Qc), which is equivalent to the price gap (Pp – PW) times the quantity produced (Q), plus the import tariff (Ti) times the quantity imported (Qc – Q). For commodities imported duty free, but subject to permits or tariff quotas, market transfers from consumers are assumed to be the price gap (Pp – PW) times the quantity domestically produced (Q), and zero for the quantity imported.

3. Reference prices

In principle, the reference price represents the closest price of the alternative disposal or consumption possibilities open to a country for a commodity similar in quality and at the same stage in the production chain to that produced in Korea. In other words, the reference price indicates the price that producers would receive and consumers would pay for a given commodity at the border (*i.e.* in the absence of trade measures, and assuming that world prices would not be affected by the removal of these trade measures). A c.i.f. import price (fob export price) should be in principle used as reference price when the country is a net importer (exporter).

The choice of actual prices depends on data availability, but the principle is to select prices that most closely express the value or cost of the alternatives to domestic production, and are most compatible with the approach used for other countries. In the case of milk, the reference price used is common to all OECD countries for which PSE calculations are made, being the producer price of milk in New Zealand, adjusted for the cost of transportation to Korea and for the relative fat content of milk. New Zealand is a low-cost milk producer and no price support is provided for its output.

For other commodities, there is no such common reference prices for all countries except for the pacific beef sector where an Australian cow reference price is used for the manufacturing segment and a US steers price is used for the non-manufacturing segment. Details of prices used in the case of Korea, sources and definitions are given in Section B of this Annex.

4. PSE and CSE decomposition

The purpose of decomposing the PSE/CSE is to provide a means of analysing changes in total PSEs and total CSEs at an aggregate level, by reference to the changes in the main components of the total PSEs and CSEs. The approach has a number of advantages. Firstly, it identifies the relative importance of changes in the various PSE and CSE components in explaining the overall year-to-year change in total PSEs and CSEs for Korea. Secondly, it allows for the condensation of a large volume of data into a concise form. The approach is briefly summarised here.[3]

The methodology is based on expressing the net total PSE for a given commodity in terms of its components, a **production volume** component and a **unit PSE.** The unit PSE is in turn broken down into a series of **unit value** components: **market price support, output levies, direct payments, other support** (*i.e.* the categories described as "Reduction in Input Costs", "General Services" and "Other" in Section A.1.

and **feed adjustment.** Market price support is itself further decomposed into a **domestic producer price component and a border price in domestic currency.** The latter in turn is made up of an exchange rate component and a **border price in US dollars** component.

Likewise, the total CSE is broken down into a **consumption volume** component and a *unit CSE*. The unit CSE has two unit value components: **market transfers** and **other transfers.** As it is the mirror image of market price support, "market transfers" consist of a **domestic consumer price** (as consumption is usually valued at the farm gate, this is also the producer price) and a **border price in domestic currency.** The latter is broken down into an **exchange rate** and a **border price in US dollars** component.

For each component, two indicators are calculated: the **percentage change** in that component and the **contribution**, in terms of percentage points, of that change to the overall change in the total PSE. The contribution of a change in a component to the total PSE can also be interpreted as the change that would have occurred in the total PSE if nothing else other than that component had changed. The sum of the contributions from all components equals the change in total PSE. Similarly, the changes in CSEs can be expressed in terms of shares in the total CSE and changes in its components. CSE indices are constructed and contributions estimated as for PSEs.

For the total PSE and for each of its components, year-to-year percentage changes in Fisher ideal indices are calculated for the aggregate of each commodity.[4] Aggregation across commodities is done by weighting these commodity indices for each individual PSE and CSE component. Weighted Fisher ideal indices are calculated from weighted Laspeyres and Paasche indices.[5] The weights used are component specific and are evaluated at base period prices for the Laspeyres indices and at current period prices for the Paasche indices.

Algebraically the **decomposition analysis** for PSE, in terms of percentage changes, is presented as follows:

$$\overset{\circ}{PSE} = \overset{\circ}{PSE}_u + \overset{\circ}{Q} + \overset{\circ}{PSE}_u \cdot \overset{\circ}{Q} \tag{1}$$

$$\overset{\circ}{PSE}_u = S_{mps} \cdot \overset{\circ}{MPS}_u - S_{lv} \cdot \overset{\circ}{LV}_u + S_{dp} \cdot \overset{\circ}{DP}_u + S_{os} \cdot \overset{\circ}{OS}_u - S_{fa} \cdot \overset{\circ}{FA}_u \tag{2}$$

$$\overset{\circ}{MPS}_u = (S_p \cdot \overset{\circ}{P} - S_{pwnc} \cdot \overset{\circ}{PW}_{nc})/S_{mps} \tag{3}$$

$$\overset{\circ}{PW}_{nc} = \overset{\circ}{XR} + \overset{\circ}{\$PW} + \overset{\circ}{XR} \cdot \overset{\circ}{\$PW} \tag{4}$$

where,

- $\circ$ indicates the percentage change in the nominated variable;
- MPS_u is unit market price support (per tonne);
- LV_u is unit levies on output (per tonne);
- DP_u is unit direct payments (per tonne);
- OS_u is unit other support (per tonne);
- FA_u is feed adjustment per unit (per tonne);
- *XR* is the exchange rate in units of domestic currency per US$;
- S_{mps}, S_{lv}, S_{dp}, S_{os} and S_{fa} are, respectively, the shares of market price support, levies, direct payments, other support and feed adjustment in the total PSE;
- S_p and S_{pwnc} each measure the value of production as a share of the total PSE, in the former case using the producer price to calculate the value of production, in the latter case using the border price (measured in national currency units) to calculate it;
- *$PW* is the *implicit* border price in US dollars; it is calculated as the difference between domestic prices and unit market price support.[6]

Equation (2) shows that the change in the unit PSE is equal to the sum of the percentage changes in its components weighted by the shares of those components in the base year. However, as the changes are expressed by Fisher Ideal indices the above expressions are not exact. Thus, approximation techniques are used to preserve the additivity of the decomposition formulae.

The decomposition analysis is based on the assumption that components of assistance are independent of one another, which is a useful simplification but needs to be interpreted carefully. In many cases the components are related; for instance, market price support and direct payments may both be influ-

enced by border price changes. In the case where market price support is provided solely by a tariff, changes in the internal price would be a direct consequence of changes in the border price.

The choice of the numéraire currency to be used for international comparison is arbitrary from a technical point of view. By convention the United States dollar has been used predominantly in OECD PSE work and is therefore used in this study. However, it can be shown that the use of an alternative numéraire currency affects only the values and contributions of the exchange rate and border price in the numéraire currency indices. No other PSE components are affected, and the differences in the exchange rate and border price indices are fully determined by the change in the exchange rate between the "old" and "new" numéraire currencies. Likewise, the contributions are determined using the share weights, which remain unaltered by any change in the choice of numéraire currency.

5. Total transfers

The PSE and CSE are estimates of **transfers to producers** from agricultural policies, but do not provide a complete picture of all transfers associated with agricultural policies. They do not cover all agricultural commodities, and exclude certain budgetary transfers that are not directly received by producers.

Total transfers resulting from agricultural policies are broadly defined as the sum of all transfers from taxpayers, including those budgetary transfers that are not directly received by producers, such as outlays for public stockholding, expenditures in support of the agro-food sector, expenditures not entirely specific to the agricultural sector (rural infrastructure and development, food aid) and payments for the withdrawal of resources from agriculture, plus all transfers from consumers (as measured by the Total CSE extrapolated to apply to all commodities), less budget revenues from tariffs on agricultural imports. Like the PSE, however, total transfers exclude outlays on general government administration, social security, taxation measures, formal education, and rural development.

6. Limitations of PSEs and CSEs

In any use of **PSE** and **CSE** indicators, such as for comparison between countries, it is important to bear in mind the recognised limits of these indicators with respect to policy coverage, commodity coverage, data availability and methodology applied, as well as to the specific characteristics of agriculture. When the PSE and CSE concepts are used to infer the degree of economic distortion in domestic prices, it is assumed that all policy measures induce the same degree of distortion per unit of support, which is not really the case. However, because the measures for which the distortion effect is expected to be minimal (e.g. expenditure on services of a general nature) account for only a small share in total assistance in most countries, the error implied is likely to be minor. Moreover, the methodology used in the calculations continues to evolve through a process of constant review within the OECD.

The PSE and CSE calculations for Korea are, in general, based on actual data, albeit often of a preliminary nature, especially for recent years. Obviously, as actual data may well depart from what has been assumed, the calculations may be revised in due course as more reliable data become available.

In the case of **total transfers,** the grossing up procedure applied to the Total CSE and budget revenues assumes that the average rate of market transfers calculated for PSE commodities can also be applied to non-PSE commodities. However, because PSE commodities accounted for around 60 per cent of the total value of agricultural production over the review period, the error implied is likely to be limited.

B. Assumptions related to the Korea PSE/CSE calculations

1. Market price support

The general methodology presented in Section A to calculate market price support to producers (MPS) requires appropriate **reference prices,** which are given in Table 14 of section C. The **exchange rates** used in the PSE/CSE calculations are those published by the OECD.[7] The calculation of market price support for each commodity is detailed in Tables 1c to 12c of Section C.

In the case of crops for which a PSE is calculated, *i.e.* barley, rice and soybeans, the average **production price** at the farmgate is the weighted average of government purchase or administered prices and prices of quantities freely marketed on the domestic market. For milk and eggs, the producer price is the price received by Korean farmers as published by the NLCF. As in the case of beef and veal, pigmeat and poultrymeat, the NLCF only publishes wholesale prices, the MAF estimated a margin taking into account by-product prices, processing and transportation costs to bring those prices to the farmgate level.

For soybeans, and barley at the end of the period, the unit value of Korean imports is used as a **reference price** as significant imports occurred. At the beginning of the period, the reference price for barley is the weighted average of the US export price of second grade barley, f.o.b., plus transportation costs (unhulled barley) and the unit value of Japanese imports of malting barley from Australia. For rice, the Chinese export price of rice, f.o.b., adjusted for transportation costs was chosen as it is considered by the Korean Government as the most likely source of Korean imports and has been such in the last few years since rice was effectively imported.

As for other countries, the reference price for milk is the farm gate price of milk in New Zealand, plus transportation costs for butter and skim-milk powder in milk equivalent from New Zealand to Korea, adjusted to Korea's fat content. Korea being in the beef production pacific zone, the standard method is applied to derive the reference price for beef and veal. As most beef imports belong to the non-manufacturing segment in Korea, the US steers price, which is the reference price for this segment, plus transportation costs, is used until 1988. Since 1989, the unit value of Korean imports of grain-fed beef from Canada and the US is the reference price for beef and veal. Implicit reference prices for the Japanese PSE calculations are used for pigmeat and eggs. For pigmeat, it is the US wholesale price in carcass weight equivalent (grade 2) plus transportation costs from the US to Japan. For eggs, this is a Japanese import price derived from the domestic wholesale price using an average tariff. The reference price for poultrymeat is the implicit reference price for the New Zealand PSE calculation for poultrymeat, *i.e.* the unit value of US exports of poultrymeat (adjusted for EEP) plus transportation costs.

For most PSE commodities, the **MPS** is estimated as being the difference between the production price and the corresponding reference price (price gap), multiplied by the quantity produced (including for self-consumption). However, as reference prices for beef and veal, pigmeat and poultrymeat are wholesale prices, the price gap is measured at the wholesale level for those products.

2. Total CSE

The total CSE consists of **Market Transfers** (MT) and **Other Transfers** (OT). For rice and livestock products, market transfers are equal to unit MPS multiplied by domestic consumption. For crops with imports sold in the domestic market at a price lower than the production price, market transfers consist of the MPS on domestic production and **budget revenues** from imports. Budget revenues arising from border policy measures were estimated by applying the tariff on imports on all the quantities imported, as measured by the difference between the level of consumption in the CSE and the level of production in the PSE. Other transfers included in the CSE calculation consist of **consumption subsidies.** Over the review period, the Korean government granted consumption subsidies to co-operatives or processing industries to subsidise their operational costs and to compensate them for the losses they incur while carrying out price stabilisation purchases. They have been allocated to the CSE according to the commodity concerned or, in the case of Foodgrain Management Fund in proportion of domestic purchases.

For commodities for which a PSE is calculated, the **consumption price** is an implicit price measured at the farm gate and equal to the production price minus the sum of unit Market Price Support and unit Market Transfers. For other products, a price paid by consumers at farmgate level had to be found. In the case of wheat, maize, sheepmeat and wool, the consumption price is the unit value of Korean imports, including tariff, while for sugar, it is the price paid by the manufacturers.

3. Budgetary support

Budgetary support consists of direct or indirect transfers from taxpayers (through budgetary or tax expenditures) to producers of PSE commodities (see Table 13, Section C). Data on the value of budgetary

expenditures associated with agricultural policies were provided by the MAF (see Table III.3). Budget expenditures for loans with interest concessions are calculated as the total value of loans multiplied by the difference between market interest rates and concessional interest rates. All budgetary expenditures are allocated within four categories of budgetary support measures defined in Section A.1 of this Annex and Total Transfers according to criteria contained in the definition such as who receives the transfers and does the measure affects production, consumption or input prices. When a programme is specific to a commodity, its expenditures are included in the PSE for this commodity. In the case of programmes covering more than one commodity, allocation is made according to the value of each commodity in the total value of commodities concerned.

4. Feed adjustment

This adjustment takes into account the implicit taxes or subsidies associated with market price support on the PSE feed commodities. The feed adjustment is the unit market price support of each of these commodities multiplied by the corresponding quantity of the domestic production used as feed. This represents the intra-sectoral transfer that have to be deducted from the Gross PSE of livestock products to obtain a Net PSE and to avoid double-counting. In the case of Korea, barley and soybeans are the only PSE feed commodities for which a PSE is calculated. As domestic production is very small and is not used as feed, there is no need for a feed adjustment element in the PSE for livestock products.

C. Tables of producer subsidy equivalents (PSE) and consumer subsidy equivalents (CSE) for Korean agriculture

General Notes:

Tables 1, 2A, 5, 10, 11 only include CSE calculations as the production of wheat, maize, sugar, sheepmeat and wool accounts respectively for less than one per cent of the gross value of total agricultural production in Korea.

Table 4 (oilseeds) only includes soybeans as the production of the other PSE oilseed commodities (rapeseed and sunflower) accounts each for less than one per cent of the gross value of total agricultural production in Korea. Similarly, barley is the only other grain with a level of production higher than one per cent of the gross value of total agricultural production.

All data are in calendar years except crop consumption which is in marketing year (rice year) 1st November/30 October, beginning in November of the previous year. For example, crop consumption from November 1979 to October 1980 is associated with data for the 1980 calendar year. In the case of crop production, calendar year 1980 corresponds to the November 1980 harvest.

Table 1. **Consumer Subsidy Equivalent – Wheat**

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	1 921	1 950	1 924	2 720	2 988	3 315	4 129	4 198	2 602	2 005	4 228	4 056	3 981	6 058	3 335	2 882	3 301
II. Consumption price (farm gate)	'000 won/t	123	144	157	137	137	116	91	99	127	123	94	117	117	106	137	184	178
III. Value of consumption	Won bn	240	281	302	374	409	384	374	416	330	246	396	476	467	643	456	530	589
IV. Total CSE	Won bn	–15	–26	–35	–20	–21	–19	–19	–13	–10	–7	–12	–14	–14	–19	–12	–2	–4
A. Market transferts	Won bn	–15	–26	–35	–20	–21	–19	–19	–13	–10	–7	–12	–14	–14	–19	–12	–2	–4
MPS on domestic production	Won bn	–4	–13	–22	–3	–1	–1	–1	–1	0	0	0	0	0	0	0	0	0
Price supplements on imports	Won bn	–11	–12	–13	–18	–19	–18	–18	–12	–10	–7	–12	–14	–14	–19	–12	–2	–4
B. Other transferts	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–8	–13	–18	–7	–7	–6	–5	–3	–4	–4	–3	–3	–3	–3	–4	–1	–1
VI. Percentage CSE	%	–6	–9	–11	–5	–5	–5	–5	–3	–3	–3	–3	–3	–3	–3	–3	0	–1

p: provisional.

Notes to Table 1
PSE: Wheat

Definitions and Notes:

Not applicable: production accounts for less than one per cent of the gross value of total agricultural production.

Notes to Table 1
CSE: Wheat

Definitions and Notes:

I. **Level of consumption:** Total consumption of wheat for food and feed use [1].

II. **Consumption price (farm gate):** Unit value of wheat imports for food and feed use [1] minus unit Market Transfers (equivalent to the unit tariff).

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

Tariffs: Value of custom receipts calculated as the *ad valorem* tariff [2] multiplied by the value of wheat imports, measured itself as the difference between consumption (I) and production [3] multiplied by the import price.

Sources :

[1] MAF, Food Grain Policy Division, *Statistics on Demand and Supply of Food Grains*, various years, Seoul.
[2] Korean Customs Research Institute, *Tariff Schedules of Korea*, various years, Seoul.
[3] MAF, *Crop Statistics*, Seoul.

Table 2A. **Consumer Subsidy Equivalent – Maize**

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	2 655	2 930	4 228	3 305	3 245	3 749	4 654	4 971	5 983	6 425	5 561	6 209	6 520	5 678	8 066	8 996	8 348
II. Consumption price (farm gate)	'000 won/t	113	129	134	145	128	105	86	94	104	105	100	109	99	104	106	144	155
III. Value of consumption	Won bn	295	378	566	479	416	394	399	467	624	673	553	676	646	593	855	1 292	1 290
IV. Total CSE	Won bn	–62	–76	–105	–47	–47	–47	–57	–61	–58	–59	–42	–52	–49	–49	–36	–42	–32
A. Market transferts	Won bn	–62	–76	–105	–47	–47	–47	–57	–61	–58	–59	–42	–52	–49	–49	–36	–42	–32
MPS on domestic production	Won bn	–18	–18	–15	–18	–22	–23	–34	–33	–42	–40	–27	–34	–31	–33	–27	–25	–29
Price supplements on imports	Won bn	–44	–58	–90	–29	–25	–24	–23	–28	–17	–18	–15	–18	–18	–16	–9	–17	–3
B. Other transferts	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–24	–26	–25	–14	–14	–12	–12	–12	–10	–9	–8	–8	–7	–9	–4	–5	–4
VI. Percentage CSE	%	–21	–20	–19	–10	–11	–12	–14	–13	–9	–9	–8	–8	–8	–8	–4	–3	–2

p: provisional.

Notes to Table 2A
PSE: Maize

Definitions and Notes:

Not applicable: production accounts for less than one per cent of the gross value of total agricultural production.

Notes to Table 2A
CSE: Maize

Definitions and Notes:

I. **Level of consumption:** Total consumption of maize for food and feed use [1].

II. **Production price (farm gate):** Unit value of maize imports for food and feed use [2] minus unit Market Transfers.

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

Trade measures: Market transfers on domestic production calculated as production price minus reference price multiplied by the level of production [4] The production price is the weighted average of government purchase prices and voluntarily marketed farm gate price of maize [3]. The reference price is the Korean average import price of maize [2].

Tariffs: Value of custom receipts calculated as the *ad valorem* tariff [5] multiplied by the value of maize imports, measured itself as the difference between consumption (I) and production [4] multiplied by the import price until 1994. From 1995, it is calculated as the sum of in-quota tariff rate applied to the import quota [6] plus over-quota tariff rate applied to imports over quota [2].

B. **Other transfers:**

Consumer subsidies: Compensation given to the NACF for the difference between the price at which it buys maize from producers and the price at which it sells it [7].

Sources :

[1] MAF, Food Grain Policy Division, *Statistics on Demand and Supply of Food Grains*, various years, Seoul.

[2] Korean Customs Services (KCS), *Statistical Yearbook on Foreign Trade*, various years, Seoul.

[3] MAF, Food Grain Policy Division, Seoul.

[4] MAF, *Crop Statistics*, Seoul.

[5] Korean Customs Research Institute, *Tariff Schedules of Korea*, various years, Seoul.

[6] *WTO, Trade Policy Review – Republic of Korea, Report by the Secretariat*, August 1996, Geneva.

[7] MAF budget data.

Table 2B. **Producer Subsidy Equivalent – Other grains**

		Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I.	Level of production	'000 t	1 438	1 059	1 159	1 130	792	627	719	781	714	574	485	448	449	321	393	401	259
II.	Producer price (farm gate)	'000 won/t	255	319	336	348	373	402	415	460	509	557	616	672	706	745	747	746	746
III.	Value of production	Won bn	354	338	389	394	295	252	298	359	364	320	299	301	317	240	294	299	193
IV.	Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V.	Direct payments	Won bn	1	0	1	0	0	0	1	0	0	4	3	4	3	3	2	2	1
VI.	Adjusted value of production	Won bn	355	338	390	394	295	252	299	359	364	324	302	305	320	242	296	301	194
VII.	**Gross total PSE**	Won bn	178	203	230	266	219	197	233	269	291	273	269	271	288	228	272	274	181
	A. Market price support	Won bn	166	191	216	251	210	188	219	254	272	249	244	247	260	205	239	234	152
	Market price support	Won bn	166	191	216	251	210	188	219	254	272	249	244	247	260	205	239	234	152
	B. Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C. Direct payments	Won bn	1	0	1	0	0	0	1	0	0	4	3	4	3	3	2	2	1
	Deficiency payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Area and headage payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Disaster payments	Won bn	1	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0
	Diversion payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Alleviation of debt	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Direct household income payments	Won bn	0	0	0	0	0	0	0	0	0	3	3	4	3	2	2	2	1
	D. Reduction of input costs	Won bn	1	1	1	1	0	0	1	3	4	5	6	6	8	6	7	8	5
	Capital grants	Won bn	0	1	0	0	0	0	0	0	1	1	1	1	3	2	3	3	1
	Interest concessions	Won bn	0	0	0	0	0	0	0	1	1	3	3	3	3	2	3	3	2
	Fertilisers	Won bn	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1
	Irrigation	Won bn	0	0	0	0	0	0	0	1	2	1	2	2	2	1	1	1	1
	Pesticides	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Grass	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Animal breeding improvement	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Seeds	Won bn	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	E. General services	Won bn	10	11	12	14	9	9	12	13	15	14	16	14	17	14	23	30	23
	Research, advisory, training	Won bn	1	1	1	1	1	1	1	2	2	2	3	1	2	1	3	2	1
	Inspection	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
	Pest and disease control	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Structures/Infrastructures	Won bn	8	9	11	12	7	7	10	10	12	12	13	12	15	12	20	26	21
	Marketing and promotion	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	F. Sub-national	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G. Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIII.	**Gross unit PSE**	'000 won/t	133	191	198	235	277	315	324	345	407	475	554	605	642	708	691	682	699
IX.	**Gross percentage PSE**	%	51	60	59	68	74	78	78	75	80	84	89	89	90	94	92	91	93

p: provisional.

Table 2B. **Consumer Subsidy Equivalent – Other grains** *(cont.)*

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	1 824	1 231	983	1 165	1 265	777	786	688	650	614	637	528	591	630	575	533	546
II. Consumption price (farm gate)	'000 won/t	224	294	369	342	274	344	389	504	549	532	500	596	571	437	557	604	440
III. Value of consumption	Won bn	406	362	363	398	346	267	306	347	357	327	318	315	337	275	320	322	240
IV. Total CSE	Won bn	–166	–191	–216	–251	–210	–188	–219	–254	–273	–251	–246	–250	–262	–207	–241	–236	–153
A. Market transferts	Won bn	–166	–191	–216	–251	–210	–188	–219	–254	–273	–251	–246	–250	–262	–207	–241	–236	–153
MPS on domestic production	Won bn	–166	–191	–216	–251	–210	–188	–219	–254	–272	–249	–244	–247	–260	–205	–239	–234	–152
Price supplements on imports	Won bn	0	0	0	0	0	0	0	0	–1	–2	–3	–3	–2	–2	–2	–1	–1
B. Other transferts	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–93	–155	–220	–216	–166	–242	–278	–369	–421	–409	–387	–474	–443	–328	–419	–442	–280
VI. Percentage CSE	%	–41	–53	–60	–63	–61	–70	–72	–73	–77	–77	–77	–80	–78	–75	–75	–73	–64

p: provisional.

Notes to Table 2B
PSE: Other grains

Definitions and Notes:

I. **Level of production:** Total production of unhulled barley, naked barley and malting barley in unhulled barley equivalent [1].

II. **Production price (farm gate):** Weighted average of government purchase prices (unhulled and naked barley), government administered price (malting barley) and voluntarily marketed farm gate price of barley [2].

III. **Value of production:** Level of production (I) multiplied by the production price (II).

A. **Market price support:**

Trade measures: Production price (II) minus reference price (see Table 14) multiplied by the level of production (I).

C. **Direct payments:** see notes to Table 13.

Disaster payments

Direct household income payments

D. **Reduction of input costs: see notes to Table 13.**

E. **General services: see notes to Table 13.**

Sources :

[1] MAF, *Crop Statistics*, various years, Seoul.
[2] MAF, Foodgrain Policy Division, Seoul.*)*

Notes to Table 2B
CSE: Other grains

Definitions and Notes:

I. **Level of consumption:** Total domestic consumption of barley for food, feed and malting use [1].

II. **Consumption price (farm gate):** Implicit price measured at the farm gate; equal to the production price (Pp) minus the sum of unit market price support (MPSu) and unit market transfers (Mtu)[= Pp – (MPSu + MTu)].

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

MPS on domestic production: The inverse of the market price support component of the PSE.

Tariffs: Value of custom receipts calculated as the ad valorem tariff [2] multiplied by the value of malting barley imports until 1994. From 1995, it is calculated as the sum of in-quota tariff rate applied to the import quota [3] plus over-quota tariff rate applied to imports over quota for malting barley and other barley [4].

Sources :

[1] MAF, Food Grain Policy Division, *Statistics on Demand and Supply of Food Grains*, various years, Seoul.
[2] Korean Customs Research Institute, *Tariff Schedules of Korea*, various years, Seoul.
[3] WTO, Trade Policy Review – *Republic of Korea, Report by the Secretariat*, August 1996, Geneva.
[4] Korean Customs Services (KCS), *Statistical Yearbook on Foreign Trade*, various years, Seoul.

Table 3. **Producer Subsidy Equivalent – Rice**

		Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I.	Level of production	'000 t	4 726	5 175	5 404	5 682	5 626	5 607	5 493	6 053	5 898	5 606	5 384	5 331	4 750	5 060	4 695	5 323	5 450
II.	Producer price (farm gate)	'000 won/t	590	721	734	754	828	893	935	1 050	1 119	1 178	1 242	1 314	1 388	1 413	1 502	1 685	1 700
III.	Value of production	Won bn	2 759	3 729	3 966	4 282	4 658	5 010	5 138	6 356	6 598	6 606	6 685	7 005	6 592	7 148	7 054	8 970	9 263
IV.	Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V.	Direct payments	Won bn	10	0	6	0	0	4	13	3	2	78	75	88	64	74	50	56	42
VI.	Adjusted value of production	Won bn	2 769	3 729	3 972	4 282	4 658	5 014	5 151	6 360	6 600	6 685	6 760	7 093	6 656	7 222	7 104	9 026	9 305
VII.	**Gross total PSE**	Won bn	1 783	2 678	3 101	3 357	3 674	4 194	4 565	5 471	5 761	6 108	6 155	6 591	6 476	6 416	6 905	8 304	8 527
	A. Market price support	Won bn	1 682	2 554	2 960	3 195	3 534	4 010	4 321	5 197	5 412	5 618	5 650	6 039	5 898	5 778	6 161	7 208	7 286
	Market price support	Won bn	1 682	2 554	2 960	3 195	3 534	4 010	4 321	5 197	5 412	5 618	5 650	6 039	5 898	5 778	6 161	7 208	7 286
	B. Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C. Direct payments	Won bn	10	0	6	0	0	4	13	3	2	78	75	88	64	74	50	56	42
	Deficiency payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Area and headage payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Disaster payments	Won bn	10	0	6	0	0	0	13	3	2	4	0	4	5	25	8	5	0
	Diversion payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Alleviation of debt	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Direct household income payments	Won bn	0	0	0	0	0	4	0	0	0	74	75	85	60	49	42	51	42
	D. Reduction of input costs	Won bn	5	7	6	10	4	8	26	49	80	119	119	140	168	182	175	233	252
	Capital grants	Won bn	2	6	5	5	5	5	5	8	12	14	17	17	52	62	64	80	60
	Interest concessions	Won bn	3	2	2	2	1	1	9	25	28	66	66	74	62	62	66	82	110
	Fertilisers	Won bn	0	0	0	0	0	0	0	0	6	4	3	15	18	21	9	23	36
	Irrigation	Won bn	0	0	0	0	0	0	0	17	32	33	34	36	34	36	35	43	45
	Pesticides	Won bn	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Grass	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Animal breeding improvement	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Seeds	Won bn	1	–2	–1	3	–1	3	12	0	2	3	0	–2	2	1	1	5	2
	E. General services	Won bn	86	116	130	152	135	172	205	221	267	292	311	323	345	382	518	807	948
	Research, advisory, training	Won bn	5	8	9	9	10	11	12	15	18	22	25	30	32	38	61	72	64
	Inspection	Won bn	3	4	4	4	4	5	6	8	8	8	9	10	10	11	10	15	16
	Pest and disease control	Won bn	1	1	1	1	2	2	1	1	2	3	3	3	5	4	4	10	7
	Structures/Infrastructures	Won bn	77	104	116	138	119	153	186	196	239	259	274	280	298	329	442	711	860
	Marketing and promotion	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	F. Sub-national	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G. Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIII.	**Gross unit PSE**	'000 won/t	382	517	574	591	653	748	831	904	977	1 090	1 143	1 236	1 363	1 268	1 471	1 560	1 565
IX.	**Gross percentage PSE**	%	64	72	78	78	79	84	89	86	87	91	91	93	97	89	97	92	92

p: provisional.

Table 3. **Consumer Subsidy Equivalent – Rice** *(cont.)*

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	5 844	5 404	5 303	5 540	5 501	5 805	5 617	5 611	5 602	5 444	5 478	5 524	5 509	5 414	5 557	5 225	5 070
II. Consumption price (farm gate)	'000 won/t	590	721	734	754	828	893	935	1 050	1 119	1 178	1 242	1 314	1 388	1 413	1 502	1 685	1 700
III. Value of consumption	Won bn	3 392	3 894	3 892	4 175	4 554	5 186	5 253	5 892	6 267	6 416	6 802	7 258	7 646	7 648	8 349	8 805	8 617
IV. Total CSE	Won bn	–2 069	–2 667	–2 905	–3 115	–3 456	–4 142	–4 407	–4 808	–5 116	–5 429	–5 730	–6 192	–6 667	–5 975	–7 057	–7 012	–6 729
A. Market transferts	Won bn	–2 069	–2 667	–2 905	–3 115	–3 456	–4 151	–4 419	–4 817	–5 140	–5 456	–5 749	–6 258	–6 842	–6 183	–7 292	–7 075	–6 778
Border measures	Won bn	–2 069	–2 667	–2 905	–3 115	–3 456	–4 151	–4 419	–4 817	–5 140	–5 456	–5 749	–6 258	–6 842	–6 183	–7 292	–7 075	–6 778
Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B. Other transferts	Won bn	0	0	0	0	0	9	11	9	24	27	19	66	174	207	235	63	49
Wholesale subsidies	Won bn	0	0	0	0	0	9	11	9	24	27	19	66	174	207	235	63	49
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–360	–493	–548	–562	–628	–714	–785	–857	–913	–997	–1 046	–1 121	–1 210	–1 104	–1 270	–1 342	–1 327
VI. Percentage CSE	%	–61	–68	–75	–75	–76	–80	–84	–82	–82	–85	–84	–85	–87	–78	–85	–80	–78

p: provisional.

Notes to Table 3
PSE: Rice (Paddy)

Definitions and Notes:

I. **Level of production:** Rice production in husked rice equivalent [1].

II. **Production price (farm gate):** Weighted average of government purchase prices [2] and voluntarily marketed farm gate price of rice [3].

III. **Value of production:** Level of production (I) multiplied by the production price (II).

A. **Market price support:**

Trade measures: Production price (II) minus reference price (see Table 14) multiplied by the level of production (I).

C. **Direct payments:** see notes to Table 13.

Disaster payments

Direct household income payments

D. **Reduction of input costs:** see notes to Table 13.

E. **General services:** see notes to Table 13.

Sources :

[1] MAF, *Crop Statistics*, various years, Seoul.
[2] MAF, Foodgrain Policy Division, Seoul.
[3] NACF, *Monthly Review*, Seoul.

Notes to Table 3
CSE: Rice (Paddy)

Definitions and Notes:

I. **Level of consumption:** Total consumption in husked rice equivalent [1].

II. **Consumption price (farm gate):** Implicit price measured at the farm gate; equal to the production price (Pp) minus the sum of unit market price support (MPSu) and unit market transfers (Mtu)[= Pp – (MPSu + MTu)] .

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

Trade measures: Market price support as calculated for the PSE divided by the volume of production and multiplied by the volume of consumption.

B. **Other transfers:**

Consumer subsidies: Compensation given to the NACF for the difference between the price at which it buys rice from producers and the price at which it sells it [2].

Sources :

[1] MAF, Food Grain Policy Division, *Statistics on Demand and Supply of Food Grains*, various years, Seoul.
[2] MAF budget data.

Table 4. **Producer Subsidy Equivalent – Oilseeds**

		Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I.	Level of production	'000 t	243	233	226	254	234	199	203	239	252	233	183	176	170	154	160	160	156
II.	Producer price (farm gate)	'000 won/t	550	727	806	785	772	802	915	1 025	1 092	1 046	1 093	1 198	1 347	1 444	1 712	1 758	1 739
III.	Value of production	Won bn	134	170	182	199	181	159	186	245	275	244	200	211	229	223	273	281	271
IV.	Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V.	Direct payments	Won bn	1	0	0	0	0	0	0	0	0	3	2	3	2	2	2	2	1
VI.	Adjusted value of production	Won bn	135	170	183	199	181	159	187	245	275	246	202	213	232	225	275	283	272
VII.	**Gross total PSE**	Won bn	93	129	143	143	134	126	159	208	235	216	179	193	215	211	272	279	262
	A. Market price support	Won bn	88	123	136	135	129	120	150	197	221	200	165	176	194	189	241	241	222
	Market price support	Won bn	88	123	136	135	129	120	150	197	221	200	165	176	194	189	241	241	222
	B. Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C. Direct payments	Won bn	1	0	0	0	0	0	0	0	0	3	2	3	2	2	2	2	1
	Deficiency payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Area and headage payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Disaster payments	Won bn	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	Diversion payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Alleviation of debt	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Direct household income payments	Won bn	0	0	0	0	0	0	0	0	0	2	2	3	2	2	2	2	1
	D. Reduction of input costs	Won bn	0	0	0	1	0	0	1	2	3	4	3	4	6	6	7	8	7
	Capital grants	Won bn	0	0	0	0	0	0	0	0	0	0	0	1	2	2	3	3	2
	Interest concessions	Won bn	0	0	0	0	0	0	0	1	1	2	2	2	2	2	3	3	3
	Fertilisers	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1
	Irrigation	Won bn	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	Pesticides	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Grass	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Animal breeding improvement	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Seeds	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	E. General services	Won bn	4	6	6	8	6	6	8	9	11	10	9	10	13	13	22	28	31
	Research, advisory, training	Won bn	0	0	0	0	0	0	0	1	1	1	1	1	1	1	2	2	2
	Inspection	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pest and disease control	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Structures/Infrastructures	Won bn	4	5	6	7	5	5	7	8	10	8	8	8	11	12	19	25	29
	Marketing and promotion	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	F. Sub-national	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G. Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIII.	**Gross unit PSE**	'000 won/t	382	551	631	563	574	632	782	868	934	928	976	1 094	1 265	1 365	1 701	1 744	1 682
IX.	**Gross percentage PSE**	%	68	76	78	72	74	79	85	85	85	88	88	90	93	94	99	99	96

p: provisional.

Table 4. **Consumer Subsidy Equivalent – Oilseeds** *(cont.)*

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	712	792	907	960	1 130	1 247	1 225	1 305	1 232	1 254	1 202	1 503	1 274	1 347	1 558	1 618	1 855
II. Consumption price (farm gate)	'000 won/t	337	385	385	413	353	312	315	369	415	368	360	337	386	384	385	418	446
III. Value of consumption	Won bn	241	305	350	396	399	389	386	481	511	462	432	507	491	517	600	676	827
IV. Total CSE	Won bn	–106	–145	–164	–153	–149	–140	–168	–219	–246	–227	–120	–203	–229	–222	–280	–272	–244
A. Market transferts	Won bn	–106	–145	–164	–153	–149	–140	–168	–219	–246	–227	–198	–211	–229	–222	–280	–272	–244
MPS on domestic production	Won bn	–88	–123	–136	–135	–129	–120	–150	–197	–221	–200	–165	–176	–194	–189	–241	–241	–222
Price supplements on imports	Won bn	–18	–23	–28	–18	–20	–21	–18	–21	–25	–27	–34	–34	–35	–33	–39	–30	–22
B. Other transferts	Won bn	0	0	0	0	0	0	0	0	0	0	78	8	0	0	0	0	0
Wholesale subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	78	8	0	0	0	0	0
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–148	–183	–181	–159	–131	–113	–137	–168	–200	–181	–100	–135	–180	–165	–179	–168	–132
VI. Percentage CSE	%	–43	–48	–47	–39	–37	–36	–44	–45	–48	–49	–28	–40	–47	–43	–47	–40	–30

p: provisional.

Notes to Table 4
PSE: Oilseeds

Definitions and Notes:

I. **Level of production:** Total production of soybeans [1].

II. **Production price (farm gate):** Weighted average of government administered price [2] and voluntarily marketed farm gate price of soybeans [3].

III. **Value of production:** Level of production (I) multiplied by the production price (II).

A. **Market price support**

Trade measures: Production price (II) minus reference price (see Table 14) multiplied by the level of production (I).

C. **Direct payments:** see notes to Table 13.

Disaster payments

Direct household income payments

D. **Reduction of input costs: see notes to Table 13.**

E. **General services: see notes to Table 13.**

Sources :

[1] MAF, *Crop Statistics*, various years, Seoul.
[2] MAF, Foodgrain Policy Division, Seoul.
[3] NACF, *Monthly Review*, Seoul.

Notes to Table 4
CSE: Oilseeds

Definitions and Notes:

I. **Level of consumption:** Total consumption of soybeans [1].

II. **Consumption price (farm gate):** Implicit price measured at the farm gate; equal to the production price (Pp) minus the sum of unit market price support (MPSu) and unit market transfers (Mtu)[= Pp – (MPSu + MTu)].

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

MPS on domestic production: The inverse of the market price support component of the PSE.

Tariffs: Value of custom receipts calculated as the ad valorem tariff [2] multiplied by the value of soybean imports, measured itself as the difference between consumption and production multiplied by the import price until 1994. From 1995, it is calculated as the sum of in-quota tariff rate applied to the import quota [3] plus over-quota tariff rate applied to soybean imports over quota [4]; plus revenues from the mark-up imposed on soybeans imports for food use [2].

B. **Other transfers:**

Consumer subsidies: Compensation given to the NACF for the difference between the price at which it buys barley from producers and the price at which it sells it [5].

Sources :

[1] MAF, Food Grain Policy Division, *Statistics on Demand and Supply of Food Grains*, various years.
[2] Korean Customs Research Institute, *Tariff Schedules of Korea*, various years, Seoul.
[3] WTO, Trade Policy Review – *Republic of Korea*, *Report by the Secretariat*, August 1996, Geneva.
[4] Korean Customs Services (KCS), *Statistical Yearbook on Foreign Trade*, various years, Seoul.
[5] MAF Budget data.

Table 5. **Consumer Subsidy Equivalent – Sugar (refined equivalent)**

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	429	385	446	500	496	534	578	596	654	655	698	730	705	760	763	769	781
II. Consumption price (farm gate)	'000 won/t	682	851	764	652	585	580	548	528	500	500	517	542	542	542	595	625	656
III. Value of consumption	Won bn	275	328	341	326	290	310	317	315	327	328	361	396	382	412	454	481	512
IV. Total CSE	Won bn	–43	–94	–97	–93	–75	–71	–63	–52	–43	–38	–42	–39	–32	–31	–34	–36	–38
A. Market transferts	Won bn	–43	–94	–97	–93	–75	–71	–63	–52	–43	–38	–42	–39	–32	–31	–34	–36	–38
MPS on domestic production	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Price supplements on imports	Won bn	–43	–94	–97	–93	–75	–71	–63	–52	–43	–38	–42	–39	–32	–31	–34	–36	–38
B. Other transferts	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–100	–243	–218	–186	–152	–134	–110	–88	–65	–58	–59	–54	–45	–40	–44	–46	–49
VI. Percentage CSE	%	–17	–29	–29	–29	–26	–23	–20	–17	–13	–12	–12	–10	–8	–7	–7	–7	–7

p: provisional.

Notes to Table 5
PSE: Sugar (refined equivalent)

Definitions and Notes :

Not applicable: there is no sugar production in Korea.

Notes to Table 5
CSE: Sugar (refined equivalent)

Definitions and Notes:

I. **Level of consumption:** Total consumption of sugar in refined sugar equivalent [1].

II. **Consumption price (farm gate):** Manufactures' price [1].

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

Tariffs: Value of custom receipts calculated as the ad valorem tariff [2] multiplied by the value of sugar imports, measured itself as consumption (I) multiplied by the implicit import price deducted from the consumption price (II) and the tariff.

Sources :

[1] Korea Sugar Manufactures' Association.
[2] Korean Customs Research Institute, *Tariff Schedules of Korea*, various years, Seoul.

Table 6. **Producer Subsidy Equivalent – Milk**

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of production	'000 t	449	576	712	841	1 006	1 154	1 413	1 632	1 762	1 752	1 741	1 816	1 858	1 917	1 998	2 034	1 894
II. Producer price (farm gate)	'000 won/t	274	313	313	313	322	322	322	322	364	364	383	383	394	394	414	431	454
III. Value of production	Won bn	124	180	223	263	324	372	455	525	641	638	667	696	732	755	827	877	860
IV. Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Direct payments	Won bn	0	0	0	0	0	0	0	0	0	7	8	9	7	5	5	6	4
VI. Adjusted value of production	Won bn	124	180	223	263	324	372	455	525	641	645	674	704	739	761	833	882	864
VII. Gross total PSE	Won bn	85	113	145	181	245	303	335	358	465	504	525	523	558	567	608	630	615
A. Market price support	Won bn	83	111	143	178	242	299	330	349	454	483	501	492	525	529	548	569	555
Market price support	Won bn	83	111	143	178	242	299	330	349	454	483	501	492	525	529	548	569	555
B. Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C. Direct payments	Won bn	0	0	0	0	0	0	0	0	0	7	8	9	7	5	5	6	4
Deficiency payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Area and headage payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Disaster payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diversion payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alleviation of debt	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Direct household income payments	Won bn	0	0	0	0	0	0	0	0	0	7	8	9	7	5	5	6	4
D. Reduction of input costs	Won bn	0	1	1	1	1	1	2	3	4	5	7	11	13	19	34	29	30
Capital grants	Won bn	0	0	0	0	0	0	0	0	0	0	2	3	2	7	22	16	14
Interest concessions	Won bn	0	0	0	0	0	0	0	1	2	4	4	7	8	10	12	12	12
Fertilisers	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pesticides	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grass	Won bn	0	1	1	1	1	1	1	1	1	1	0	1	4	2	0	0	4
Animal breeding improvement	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seeds	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E. General services	Won bn	1	2	2	2	2	3	3	6	8	8	9	12	14	14	20	27	25
Research, advisory, training	Won bn	1	1	1	1	2	2	2	5	6	7	7	9	11	11	17	22	20
Inspection	Won bn	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	3
Pest and disease control	Won bn	0	0	0	0	0	1	1	1	1	1	1	1	1	1	2	3	3
Structures/Infrastructures	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing and promotion	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F. Sub-national	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G. Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIII. Gross unit PSE	'000 won/t	188	196	204	215	244	263	237	219	264	288	302	288	301	296	304	310	325
IX. Gross percentage PSE	%	69	63	65	69	76	82	74	68	73	78	78	74	76	75	73	71	71
X. Feed adjustment	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excess feed cost	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other feed cost	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XI. Net total PSE	Won bn	85	113	145	181	245	303	335	358	465	504	525	523	558	567	608	630	615
XII. Net unit PSE	'000 won/t	188	196	204	215	244	263	237	219	264	288	302	288	301	296	304	310	325
XIII. Net percentage PSE	%	69	63	65	69	76	82	74	68	73	78	78	74	76	75	73	71	71

p: provisional.

Table 6. **Consumer Subsidy Equivalent – Milk** *(cont.)*

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	448	593	729	834	972	1 162	1 425	1 652	1 642	1 879	1 869	1 920	1 984	2 078	2 144	2 465	2 440
II. Consumption price (farm gate)	'000 won/t	274	313	313	313	322	322	322	322	364	364	383	383	394	394	414	431	454
III. Value of consumption	Won bn	125	186	228	261	313	374	459	532	598	684	716	736	782	819	888	1 063	1 108
IV. Total CSE	Won bn	–82	–112	–143	–174	–232	–292	–326	–348	–420	–508	–532	–514	–554	–567	–582	–684	–708
A. Market transferts	Won bn	–83	–114	–146	–176	–234	–301	–333	–353	–423	–518	–538	–520	–560	–574	–588	–690	–715
Border measures	Won bn	–83	–114	–146	–176	–234	–301	–333	–353	–423	–518	–538	–520	–560	–574	–588	–690	–715
Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B. Other transferts	Won bn	2	2	3	2	2	9	7	5	3	10	5	6	6	6	7	5	7
Wholesale subsidies	Won bn	2	2	3	2	2	9	7	5	3	10	5	6	6	6	7	5	7
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–181	–189	–197	–209	–238	–251	–229	–211	–256	–271	–285	–268	–279	–273	–271	–277	–290
VI. Percentage CSE	%	–66	–60	–63	–67	–74	–78	–71	–65	–70	–74	–74	–70	–71	–69	–66	–64	–64

p: provisional.

Notes to Table 6
PSE: Milk

Definitions and Notes:

I. **Level of production:** Domestic production of raw milk [1].

II. **Production price (farm gate):** Producer price of raw milk [1].

III. **Value of production:** Level of production (I) multiplied by the production price (II).

A. **Market price support:**

Trade measures: Production price (II) minus reference price (see Table 14) multiplied by the level of production (I).

C. **Direct payments:** see notes to Table 13.

Diversion payments

Direct household income payments

D. **Reduction of input costs:** see notes to Table 13.

E. **General services:** see notes to Table 13.

XI. Feed adjustment: see notes to Table 13.

Sources :

[1] NLCF, *Materials on Price, Demand and Supply of Livestock Products*, various years, Seoul.

Notes to Table 6
CSE: Milk

Definitions and Notes:

I. **Level of consumption:** Domestic consumption of cow milk in raw milk equivalent [1].

II. **Consumption price (farm gate):** Implicit price measured at the farm gate; equal to the production price (Pp) minus the sum of unit market price support (MPSu) and unit market transfers (Mtu)[= Pp – (MPSu + MTu)].

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

Trade measures: Market Price Support as calculated for the PSE divided by the volume of production and multiplied by the volume of consumption.

B. **Other transfers**

Consumer subsidies: Interest concession on loans provided to the NLCF and processing companies to subsidise their operational costs; compensation given through the LIDF to milk processing companies for the difference between the price at which they buy milk from producers and the price at which they sell it; and for the milk they provide to elementary schools [2].

Sources :

[1] NLCF, *Materials on Price, Demand and Supply of Livestock Products*, various years, Seoul.
[2] MAF budget data.

Table 7. **Producer Subsidy Equivalent – Beef and veal**

		Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I.	Level of production	'000 t	119	88	94	130	167	215	213	181	129	136	141	142	185	210	221	248	338
II.	Producer price (farm gate)	'000 won/t	3 844	5 584	6 087	5 883	4 502	3 980	4 009	5 648	6 412	6 808	7 526	7 840	6 995	7 490	8 148	7 102	5 580
III.	Value of production	Won bn	446	491	572	765	752	856	854	1 022	827	926	1 061	1 113	1 294	1 573	1 801	1 761	1 886
IV.	Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V.	Direct payments	Won bn	2	0	1	1	0	1	0	0	0	12	15	20	17	12	12	15	11
VI.	Adjusted value of production	Won bn	448	491	573	766	752	856	854	1 022	827	938	1 077	1 133	1 311	1 585	1 813	1 776	1 897
VII.	**Gross total PSE**	Won bn	265	324	393	505	419	434	424	666	564	659	781	819	894	1 134	1 378	1 310	1 264
	A. Market price support	Won bn	257	314	378	486	405	421	413	654	546	624	733	749	816	1 043	1 243	1 173	1 111
	Market price support	Won bn	257	314	378	486	405	421	413	654	546	624	733	749	816	1 043	1 243	1 173	1 111
	B. Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C. Direct payments	Won bn	2	0	1	1	0	1	0	0	0	12	15	20	17	12	12	15	11
	Deficiency payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Area and headage payments	Won bn	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
	Disaster payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Diversion payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Alleviation of debt	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Direct household income payments	Won bn	0	0	0	0	0	1	0	0	0	12	15	20	17	12	12	14	10
	D. Reduction of input costs	Won bn	2	5	5	8	4	3	4	3	6	9	15	25	30	44	67	54	76
	Capital grants	Won bn	0	0	0	0	0	0	0	0	0	0	5	7	4	17	42	33	42
	Interest concessions	Won bn	1	0	0	2	0	0	0	2	3	6	9	15	17	23	25	20	24
	Fertilisers	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Irrigation	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pesticides	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Grass	Won bn	1	3	3	5	2	2	2	1	2	2	1	2	9	5	0	0	9
	Animal breeding improvement	Won bn	0	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0
	Seeds	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	E. General services	Won bn	4	6	10	10	10	9	8	9	12	14	18	25	31	34	55	68	66
	Research, advisory, training	Won bn	2	4	7	8	7	6	6	7	10	11	14	20	25	28	47	56	54
	Inspection	Won bn	0	1	1	1	1	1	1	1	1	1	2	3	3	3	4	6	6
	Pest and disease control	Won bn	0	1	2	1	1	2	1	1	1	1	2	3	3	3	4	7	6
	Structures/Infrastructures	Won bn	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Marketing and promotion	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	F. Sub-national	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G. Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIII.	**Gross unit PSE**	'000 won/t	2 308	3 685	4 182	3 888	2 509	2 019	1 992	3 681	4 370	4 844	5 539	5 767	4 831	5 399	6 233	5 284	3 740
IX.	**Gross percentage PSE**	%	59	66	69	66	56	51	50	65	68	70	73	72	68	72	76	74	67
X.	**Feed adjustment**	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Excess feed cost	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other feed cost	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XI.	**Net total PSE**	Won bn	265	324	393	505	419	434	424	666	564	659	781	819	894	1 134	1 378	1 310	1 264
XII.	**Net unit PSE**	'000 won/t	2 308	3 685	4 182	3 888	2 509	2 019	1 992	3 681	4 370	4 844	5 539	5 767	4 831	5 399	6 233	5 284	3 740
XIII.	**Net percentage PSE**	%	59	66	69	66	56	51	50	65	68	70	73	72	68	72	76	74	67

p: provisional.

Table 7. **Consumer Subsidy Equivalent – Beef and veal** *(cont.)*

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	146	152	165	152	172	211	217	202	205	253	319	324	333	385	430	461	517
II. Consumption price (farm gate)	'000 won/t	3 844	5 584	6 087	5 883	4 502	3 980	4 009	5 648	6 412	6 808	7 526	7 840	6 995	7 490	8 148	7 102	5 580
III. Value of consumption	Won bn	552	849	1 004	894	774	840	870	1 141	1 314	1 722	2 401	2 540	2 329	2 884	3 504	3 274	2 885
IV. Total CSE	Won bn	–319	–541	–663	–565	–399	–392	–380	–713	–857	–1 160	–1 657	–1 709	–1 468	–1 912	–2 417	–2 177	–1 542
A. Market transferts	Won bn	–320	–542	–663	–568	–417	–414	–421	–730	–867	–1 161	–1 657	–1 710	–1 470	–1 913	–2 418	–2 181	–1 700
Border measures	Won bn	–320	–542	–663	–568	–417	–414	–421	–730	–867	–1 161	–1 657	–1 710	–1 470	–1 913	–2 418	–2 181	–1 700
Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B. Other transferts	Won bn	1	1	0	3	19	21	41	16	10	1	0	1	1	1	1	4	158
Wholesale subsidies	Won bn	1	1	0	3	19	21	41	16	10	1	0	1	1	1	1	4	158
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–2 228	–3 561	–4 018	–3 720	–2 318	–1 859	–1 752	–3 532	–4 181	–4 586	–5 194	–5 276	–4 410	–4 966	–5 620	–4 722	–2 983
VI. Percentage CSE	%	–57	–64	–66	–63	–51	–47	–44	–63	–65	–67	–69	–67	–63	–66	–69	–66	–53

p: provisional.

Notes to Table 7
PSE: Beef and veal

Definitions and Notes:

I. **Level of production:** Domestic production of beef and veal in carcass weight equivalent [1].

II. **Production price (farm gate):** Average auction price of beef meat in three wholesale markets in Seoul, in carcass weight equivalent *(i)* [1] adjusted for by-product price, slaughtering costs and transportation costs (3 per cent) to bring this price to the farm gate level [2].

III. **Value of production:** Level of production (I) multiplied by the production price (II).

A. **Market price support:**

Trade measures: Wholesale price (i) minus reference price (see Table 14) multiplied by the level of production (I).

C. **Direct payments:** see notes to Table 13.

Area and headage payments

Alleviation of debt

Direct household income payments

D. **Reduction of input costs:** see notes to Table 13.

E. **General services:** see notes to Table 13.

XI. **Feed adjustment:** see notes to Table 13.

Sources :

[1] NLCF, *Materials on Price, Demand and Supply of Livestock Products*, various years, Seoul.
[2] MAF estimates.

Notes to Table 7
CSE: Beef and veal

Definitions and Notes:

I. **Level of consumption:** Total domestic consumption of beef and veal in carcass weight equivalent [1].

II. **Consumption price (farm gate):** Implicit price measured at the farm gate; equal to the production price (Pp) minus the sum of unit market price support (MPSu) and unit market transfers (Mtu)[= Pp – (MPSu + MTu)].

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

Trade measures: Market Price Support as calculated for the PSE divided by the volume of production and multiplied by the volume of consumption.

B. **Other transfers**

Consumer subsidies: Interest concession on loans to the NLCF and/or processing companies to subsidise their operational costs and to compensate them for the difference between the price at which they buy beef from producers and the price at which they sell it [2].

Sources :

[1] NLCF, Materials on Price, *Demand and Supply of Livestock Products*, various years, Seoul.
[2] MAF budget data.

Table 8. **Producer Subsidy Equivalent – Pigmeat**

		Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I.	Level of production	'000 t	285	305	378	437	443	412	483	554	622	649	640	771	793	796	820	887	896
II.	Producer price (farm gate)	'000 won/t	1 649	2 398	2 086	1 797	2 222	2 312	1 784	1 797	1 564	2 443	2 559	1 944	2 038	2 263	2 202	2 344	2 249
III.	Value of production	Won bn	465	731	789	785	984	953	862	996	973	1 586	1 638	1 499	1 616	1 801	1 806	2 079	2 015
IV.	Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V.	Direct payments	Won bn	0	0	0	0	0	1	0	0	0	13	16	16	19	19	21	19	18
VI.	Adjusted value of production	Won bn	465	731	789	785	984	954	862	996	973	1 599	1 654	1 515	1 635	1 820	1 826	2 098	2 034
VII.	**Gross total PSE**	Won bn	246	356	373	261	428	351	188	414	355	789	925	683	689	971	968	849	588
	A. Market price support	Won bn	241	350	366	256	420	340	179	402	344	757	880	634	638	911	877	755	477
	Market price support	Won bn	241	350	366	256	420	340	179	402	344	757	880	634	638	911	877	755	477
	B. Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C. Direct payments	Won bn	0	0	0	0	0	1	0	0	0	13	16	16	19	19	21	19	18
	Deficiency payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Area and headage payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	6	9	12	8	10
	Disaster payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Diversion payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Alleviation of debt	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Direct household income payments	Won bn	0	0	0	0	0	1	0	0	0	13	16	16	12	10	9	11	9
	D. Reduction of input costs	Won bn	0	0	0	0	0	0	1	3	3	7	14	17	16	22	45	43	59
	Capital grants	Won bn	0	0	0	0	0	0	1	0	0	0	5	5	3	5	25	19	26
	Interest concessions	Won bn	0	0	0	0	0	0	1	3	3	7	9	12	13	16	20	24	33
	Fertilisers	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Irrigation	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pesticides	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Grass	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Animal breeding improvement	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Seeds	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	E. General services	Won bn	5	6	7	5	8	9	8	9	8	11	14	16	17	19	26	32	33
	Research, advisory, training	Won bn	2	4	4	3	5	6	5	6	5	7	10	12	12	14	20	22	22
	Inspection	Won bn	0	1	1	1	1	1	1	1	1	2	2	2	2	2	3	5	5
	Pest and disease control	Won bn	0	1	1	1	1	2	1	1	1	2	2	2	2	3	3	6	6
	Structures/Infrastructures	Won bn	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Marketing and promotion	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	F. Sub-national	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G. Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIII.	**Gross unit PSE**	'000 won/t	878	1 166	988	598	966	851	390	748	571	1 215	1 445	886	869	1 220	1 181	958	656
IX.	**Gross percentage PSE**	%	50	49	47	33	43	37	22	42	36	49	56	45	42	53	53	40	29
X.	**Feed adjustment**	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Excess feed cost	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other feed cost	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XI.	**Net total PSE**	Won bn	246	356	373	261	428	351	188	414	355	789	925	683	689	971	968	849	588
XII.	**Net unit PSE**	'000 won/t	878	1 166	988	598	966	851	390	748	571	1 215	1 445	886	869	1 220	1 181	958	656
XIII.	**Net percentage PSE**	%	50	49	47	33	43	37	22	42	36	49	56	45	42	53	53	40	29

p: provisional.

Table 8. **Consumer Subsidy Equivalent – Pigmeat** *(cont.)*

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	289	305	378	435	444	411	478	545	605	647	655	750	786	811	848	894	895
II. Consumption price (farm gate)	'000 won/t	1 649	2 398	2 086	1 797	2 222	2 312	1 784	1 797	1 564	2 443	2 559	1 944	2 038	2 263	2 202	2 344	2 249
III. Value of consumption	Won bn	471	731	789	782	987	950	853	979	946	1 581	1 676	1 458	1 602	1 835	1 867	2 096	2 013
IV. Total CSE	Won bn	–241	–349	–366	–255	–421	–338	–177	–395	–334	–754	–900	–615	–631	–927	–905	–760	–474
A. Market transferts	Won bn	–243	–350	–366	–255	–421	–340	–178	–396	–335	–755	–901	–617	–633	–928	–907	–761	–477
Border measures	Won bn	–243	–350	–366	–255	–421	–340	–178	–396	–335	–755	–901	–617	–633	–928	–907	–761	–477
Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B. Other transferts	Won bn	2	1	0	0	0	2	0	0	0	1	1	2	1	2	2	1	3
Wholesale subsidies	Won bn	2	1	0	0	0	2	0	0	0	1	1	2	1	2	2	1	3
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–853	–1 143	–969	–585	–949	–822	–371	–725	–552	–1 165	–1 374	–819	–803	–1 142	–1 067	–850	–529
VI. Percentage CSE	%	–48	–48	–46	–33	–43	–36	–21	–40	–35	–48	–54	–42	–39	–50	–48	–36	–24

p: provisional.

Notes to Table 8
PSE: Pigmeat

Definitions and Notes:

I. **Level of production:** Domestic production of pigmeat in carcass weight equivalent [1].

II. **Production price (farm gate):** Average auction price of pigmeat in three wholesale markets in Seoul, in carcass weight equivalent (i) [1] adjusted for by-product price, slaughtering costs and transportation costs (5 per cent) to bring this price to the farm gate level [2].

III. **Value of production:** Level of production (I) multiplied by the production price (II).

A. **Market price support:**

Trade measures: Wholesale price (i) minus reference price (see Table 14) multiplied by the level of production (I).

C. **Direct payments:** see notes to Table 13.

Area and headage payments

Direct household income payments

D. **Reduction of input costs:** see notes to Table 13.

E. **General services:** see notes to Table 13.

XI. **Feed adjustment:** see notes to Table 13.

Sources :

[1] NLCF, Materials on Price, *Demand and Supply of Livestock Products,* various years, Seoul.
[2] MAF estimates.

Notes to Table 8
CSE: Pigmeat

Definitions and Notes:

I. **Level of consumption:** Total domestic consumption of pigmeat, in carcass weight equivalent [1].

II. Consumption price (farm gate): Implicit price measured at the farm gate; equal to the production price (Pp) minus the sum of unit market price support (MPSu) and unit market transfers (Mtu) (Mtu)[= Pp – (MPSu + MTu)] .

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

Trade measures: Market Price Support as calculated for the PSE divided by the volume of production and multiplied by the volume of consumption.

B. **Other transfers**

Consumer subsidies: Interest concession on loans to the NLCF and/or processing companies to subsidise their operational costs and to compensate them for the difference between the price at which they buy pigs from producers and the price at which they sell them [2].

Sources :

[1] NLCF, Materials on Price, *Demand and Supply of Livestock Products,* various years, Seoul.
[2] MAF budget data.

Table 9. **Producer Subsidy Equivalent – Poultrymeat**

		Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I.	Level of production	'000 t	129	141	171	168	180	185	201	213	221	245	295	338	342	347	376	395	371
II.	Producer price (farm gate)	'000 won/t	1 085	1 248	1 183	1 352	1 349	1 264	1 228	1 451	1 502	1 603	1 533	1 512	1 450	1 880	1 778	1 794	1 795
III.	Value of production	Won bn	140	176	202	227	243	234	247	309	332	393	452	511	496	652	669	709	666
IV.	Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V.	Direct payments	Won bn	0	0	0	0	0	0	0	0	0	5	6	6	5	5	5	5	4
VI.	Adjusted value of production	Won bn	140	176	202	227	243	234	247	309	332	398	458	517	501	658	673	713	669
VII.	**Gross total PSE**	Won bn	58	74	61	78	95	79	115	180	187	225	250	259	261	447	505	533	488
	A. Market price support	Won bn	56	72	59	76	90	74	110	166	177	212	230	237	238	401	444	485	428
	Market price support	Won bn	56	72	59	76	90	74	110	166	177	212	230	237	238	401	444	485	428
	B. Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C. Direct payments	Won bn	0	0	0	0	0	0	0	0	0	5	6	6	5	5	5	5	4
	Deficiency payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Area and headage payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Disaster payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Diversion payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Alleviation of debt	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Direct household income payments	Won bn	0	0	0	0	0	0	0	0	0	5	6	6	5	5	5	5	4
	D. Reduction of input costs	Won bn	0	0	0	0	3	2	2	12	7	4	10	10	11	29	42	30	43
	Capital grants	Won bn	0	0	0	0	0	0	0	0	0	0	2	2	1	3	9	8	10
	Interest concessions	Won bn	0	0	0	0	3	2	2	12	6	3	8	8	10	26	32	22	33
	Fertilisers	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Irrigation	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pesticides	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Grass	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Animal breeding improvement	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Seeds	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	E. General services	Won bn	2	2	2	2	2	3	3	2	3	4	5	6	7	11	15	13	13
	Research, advisory, training	Won bn	1	1	1	1	1	2	2	2	2	3	3	4	5	8	12	9	9
	Inspection	Won bn	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1	2	2
	Pest and disease control	Won bn	0	0	0	0	0	1	1	0	0	1	1	1	1	1	2	2	2
	Structures/Infrastructures	Won bn	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Marketing and promotion	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	F. Sub-national	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G. Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIII.	**Gross unit PSE**	'000 won/t	447	524	359	464	526	425	574	843	845	917	849	767	763	1 287	1 344	1 349	1 315
IX.	**Gross percentage PSE**	%	40	42	30	34	39	34	47	58	56	56	55	50	52	68	75	75	73
X.	**Feed adjustment**	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Excess feed cost	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other feed cost	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XI.	**Net total PSE**	Won bn	58	74	61	78	95	79	115	180	187	225	250	259	261	447	505	533	488
XII.	**Net unit PSE**	'000 won/t	447	524	359	464	526	425	574	843	845	917	849	767	763	1 287	1 344	1 349	1 315
XIII.	**Net percentage PSE**	%	40	42	30	34	39	34	47	58	56	56	55	50	52	68	75	75	73

p: provisional.

Table 9. **Consumer Subsidy Equivalent – Poultrymeat** *(cont.)*

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	129	142	171	168	180	185	201	213	221	245	295	331	344	349	383	403	399
II. Consumption price (farm gate)	'000 won/t	1 085	1 248	1 183	1 352	1 349	1 264	1 228	1 451	1 502	1 603	1 533	1 512	1 450	1 880	1 778	1 794	1 795
III. Value of consumption	Won bn	140	177	202	227	243	234	247	309	332	393	452	500	499	656	681	723	716
IV. Total CSE	Won bn	–56	–72	–59	–76	–90	–74	–110	–166	–177	–211	–229	–232	–239	–403	–452	–495	–460
A. Market transferts	Won bn	–56	–72	–59	–76	–90	–74	–110	–166	–177	–212	–230	–232	–239	–404	–453	–495	–460
Border measures	Won bn	–56	–72	–59	–76	–90	–74	–110	–166	–177	–212	–230	–232	–239	–404	–453	–495	–460
Price supplements on imports	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B. Other transferts	Won bn	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Wholesale subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–431	–507	–347	–452	–498	–401	–548	–778	–800	–863	–777	–700	–695	–1 156	–1 181	–1 229	–1 153
VI. Percentage CSE	%	–38	–41	–29	–33	–37	–32	–45	–54	–53	–54	–51	–46	–48	–61	–66	–68	–64

p: provisional.

Notes to Table 9
PSE: Poultrymeat

Definitions and Notes:

I. **Level of production:** Domestic production of chickenmeat in carcass weight equivalent [1].

II. **Production price (farm gate):** Delivery price of chickenmeat to wholesale markets in carcass weight equivalent(i) [1] adjusted for slaughtering costs and transportation costs (15 per cent) to bring this price to the farm gate level [2].

III. **Value of production:** Level of production (I) multiplied by the production price (II).

A. **Market price support**

Trade measures: Wholesale price (i) minus reference price (see Table 14) multiplied by the level of production (I).

C. **Direct payments:** see notes to Table 13.

Direct household income payments

D. **Reduction of input costs:** see notes to Table 13.

E. **General services:** see notes to Table 13.

XI. **Feed adjustment:** see notes to Table 13.

Sources :

[1] NLCF, *Materials on Price, Demand and Supply of Livestock Products,* various years, Seoul.
[2] MAF estimates.

Notes to Table 9
CSE: Poultrymeat

Definitions and Notes:

I. **Level of consumption:** Total domestic consumption of chickenmeat in carcass weight equivalent [1].

II. **Consumption price (farm gate):** Implicit price measured at the farm gate; equal to the production price (Pp) minus the sum of unit market price support (MPSu) and unit market transfers (Mtu)[= Pp – (MPSu + MTu)].

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

Trade measures: Market Price Support as calculated for the PSE divided by the volume of production and multiplied by the volume of consumption.

B. **Other transfers**

Consumer subsidies: Interest concession on loans to the NLCF and/or processing companies to subsidise their operational costs [2].

Sources :

[1] NLCF, Materials on Price, *Demand and Supply of Livestock Products,* various years, Seoul.
[2] MAF budget data.

Table 10. **Consumer Subsidy Equivalent – Sheepmeat**

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	8	4	5	2	6	4	6	12	12	9	7	13	9	8	10	7	6
II. Consumption price (farm gate)	'000 won/t	785	981	837	1 103	939	932	841	695	590	740	844	968	1 131	1 060	1 165	1 235	1 511
III. Value of consumption	Won bn	6	3	4	2	6	4	5	8	7	6	5	13	10	8	11	9	9
IV. Total CSE	Won bn	–1	–1	–1	–1	–1	–1	–1	–2	–2	–1	–1	–3	–2	–2	–3	–2	–2
A. Market transferts	Won bn	–1	–1	–1	–1	–1	–1	–1	–2	–2	–1	–1	–3	–2	–2	–3	–2	–2
MPS on domestic production	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Price supplements on imports	Won bn	–1	–1	–1	–1	–1	–1	–1	–2	–2	–1	–1	–3	–2	–2	–3	–2	–2
B. Other transferts	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–157	–196	–167	–254	–217	–215	–194	–160	–136	–171	–195	–223	–261	–245	–261	–272	–326
VI. Percentage CSE	%	–20	–20	–20	–23	–23	–23	–23	–23	–23	–23	–23	–23	–23	–23	–22	–22	–22

p: provisional.

Notes to Table 10
PSE: Sheepmeat

Definitions and Notes:

Not applicable: production accounts for less than one per cent of the gross value of total agricultural production.

Notes to Table 10
CSE: Sheepmeat

Definitions and Notes:

I. **Level of consumption:** Total domestic consumption of sheepmeat calculated as net imports [1].

II. **Consumption price (farm gate):** Unit value of Korean imports [1] minus unit Market Transfers (equivalent to the unit tariff).

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

Tariffs: Value of custom receipts calculated as the ad valorem tariff [2] multiplied by the value of sheepmeat imports [1].

Sources :

[1] Korean Customs Services (KCS), *Statistical Yearbook on Foreign Trade*, various years, Seoul.
[2] Korean Customs Research Institute, *Tariff Schedules of Korea*, various years, Seoul.

Table 11. **Consumer Subsidy Equivalent – Wool**

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	25	29	30	27	31	38	44	37	34	34	38	38	35	40	36	27	22
II. Consumption price (farm gate)	'000 won/t	4 492	5 345	4 483	4 564	4 243	3 983	4 576	6 524	5 371	4 540	3 725	4 019	3 398	4 493	4 941	4 469	5 544
III. Value of consumption	Won bn	115	154	134	125	132	152	201	243	185	155	141	153	119	181	179	119	120
IV. Total CSE	Won bn	–38	–45	–37	–25	–20	–16	–22	–30	–5	–4	–4	–4	–3	–4	–5	–3	–2
A. Market transferts	Won bn	–38	–45	–37	–25	–20	–16	–22	–30	–5	–4	–4	–4	–3	–4	–5	–3	–2
MPS on domestic production	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Price supplements on imports	Won bn	–38	–45	–37	–25	–20	–16	–22	–30	–5	–4	–4	–4	–3	–4	–5	–3	–2
B. Other transferts	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	–1 507	–1 555	–1 250	–910	–626	–407	–504	–795	–156	–125	–100	–101	–83	–109	–126	–109	–115
VI. Percentage CSE	%	–34	–29	–28	–20	–15	–10	–11	–12	–3	–3	–3	–3	–2	–2	–3	–2	–2

p: provisional.

Notes to Table 11
PSE: Wool

Definitions and Notes:

Not applicable: production accounts for less than one per cent of the gross value of total agricultural production.

Notes to Table 11
CSE: Wool

Definitions and Notes:

I. **Level of consumption:** Total consumption of wool calculated as net imports [1].

II. **Consumption price (farm gate):** Unit value of Korean imports [1] minus unit Market Transfers (equivalent to the unit tariff).

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers:**

Tariffs: Value of custom receipts calculated as the ad valorem tariff [2] multiplied by the value of wool imports [1].

Sources :

[1] Korean Customs Services (KCS), *Statistical Yearbook on Foreign Trade*, various years, Seoul.
[2] Korean Customs Research Institute, *Tariff Schedules of Korea*, various years, Seoul.

Table 12. **Producer Subsidy Equivalent – Eggs**

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of production	'000 t	242	248	271	272	296	332	362	397	381	393	422	424	447	440	454	470	478
II. Producer price (farm gate)	'000 won/t	601	787	882	907	864	778	713	693	1 007	1 047	875	1 062	884	1 056	1 238	1 235	1 325
III. Value of production	Won bn	146	195	239	246	256	258	258	275	383	412	369	450	395	465	562	580	633
IV. Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Direct payments	Won bn	0	0	0	0	0	0	0	0	0	5	4	6	4	3	3	4	3
VI. Adjusted value of production	Won bn	146	195	239	246	256	258	258	275	383	417	373	456	399	469	565	584	636
VII. Gross total PSE	Won bn	–7	35	61	57	19	–133	–31	–37	94	62	–92	114	–10	1	82	18	36
A. Market price support	Won bn	–9	33	60	55	17	–135	–33	–40	89	51	–104	97	–23	–14	58	–7	7
Market price support	Won bn	–9	33	60	55	17	–135	–33	–40	89	51	–104	97	–23	–14	58	–7	7
B. Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C. Direct payments	Won bn	0	0	0	0	0	0	0	0	0	5	4	6	4	3	3	4	3
Deficiency payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Area and headage payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Disaster payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diversion payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alleviation of debt	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Direct household income payments	Won bn	0	0	0	0	0	0	0	0	0	5	4	6	4	3	3	4	3
D. Reduction of input costs	Won bn	0	0	0	0	0	0	0	1	1	3	4	6	5	5	11	11	15
Capital grants	Won bn	0	0	0	0	0	0	0	0	0	0	1	2	1	1	6	6	8
Interest concessions	Won bn	0	0	0	0	0	0	0	1	1	2	2	4	4	4	5	4	7
Fertilisers	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pesticides	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grass	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Animal breeding improvement	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seeds	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E. General services	Won bn	1	1	1	1	2	2	2	2	3	4	4	5	5	6	10	11	10
Research, advisory, training	Won bn	1	1	1	1	1	1	1	2	2	3	2	4	4	5	8	7	7
Inspection	Won bn	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	2	2
Pest and disease control	Won bn	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	2	2
Structures/Infrastructures	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing and promotion	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F. Sub-national	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G. Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIII. Gross unit PSE	'000 won/t	–29	140	226	208	63	–401	–85	–92	246	158	–218	270	–22	3	181	39	75
IX. Gross percentage PSE	%	–3	18	26	23	7	–51	–12	–13	24	15	–25	25	–3	0	14	3	6
X. Feed adjustment	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excess feed cost	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other feed cost	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XI. Net total PSE	Won bn	–7	35	61	57	19	–133	–31	–37	94	62	–92	114	–10	1	82	18	36
XII. Net unit PSE	'000 won/t	–29	140	226	208	63	–401	–85	–92	246	158	–218	270	–22	3	181	39	75
XIII. Net percentage PSE	%	–3	18	26	23	7	–51	–12	–13	24	15	–25	25	–3	0	14	3	6

p: provisional.

Table 12. **Consumer Subsidy Equivalent – Eggs** *(cont.)*

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
I. Level of consumption	'000 t	242	248	271	272	296	332	362	397	381	393	422	424	445	442	454	470	477
II. Consumption price (farm gate)	'000 won/t	601	787	882	907	864	778	713	693	1 007	1 047	875	1 062	884	1 056	1 238	1 235	1 325
III. Value of consumption	Won bn	146	195	239	246	256	258	258	275	383	412	369	450	394	467	563	580	632
IV. Total CSE	Won bn	9	–33	–60	–55	–17	135	33	40	–89	–51	104	–97	24	14	–57	7	–7
A. Market transferts	Won bn	9	–33	–60	–55	–17	135	33	40	–89	–51	104	–97	23	14	–58	7	–7
Border measures	Won bn	9	–33	–60	–55	–17	135	33	40	–89	–51	104	–97	23	14	–58	7	–7
Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B. Other transferts	Won bn	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Wholesale subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Other subsidies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Unit CSE	'000 won/t	37	–134	–220	–202	–57	408	91	100	–234	–129	247	–228	53	32	–126	14	–15
VI. Percentage CSE	%	4	–17	–25	–22	–7	52	13	14	–23	–12	28	–21	6	3	–10	1	–1

p: provisional.

Notes to Table 12
PSE: Eggs

Definitions and Notes:

I. **Level of production:** Domestic production of eggs in shell, converted in tonnes using the conversion coefficient 1 egg = 55 grams [1].

II. **Production price (farm gate):** Price of large size eggs received by farmers [1].

III. **Value of production:** Level of production (I) multiplied by the production price (II).

A. **Market price support:**

Trade measures: Production price (II) minus reference price (see Table 14) multiplied by the level of production (I).

C. **Direct payments: see notes to Table 13.**

Direct household income payments

D. **Reduction of input costs: see notes to Table 13.**

E. **General services: see notes to Table 13.**

XI. **Feed adjustment:** see notes to Table 13.

Sources :

[1] NLCF, *Materials on Price, Demand and Supply of Livestock Products,* various years, Seoul.

Notes to Table 12
CSE: Eggs

Definitions and Notes:

I. **Level of consumption:** Total domestic consumption of eggs [1].

II. **Consumption price (farm gate):** Implicit price measured at the farm gate; equal to the production price (Pp) minus the sum of unit market price support (MPSu) and unit market transfers (Mtu)[= Pp – (MPSu + MTu)].

III. **Value of consumption:** Level of consumption (I) multiplied by the consumption price (II).

A. **Market transfers**

Trade measures: Market Price Support as calculated for the PSE divided by the volume of production and multiplied by the volume of consumption.

B. **Other transfers**

Consumer subsidies: Interest concession on loans to the NLCF and/or processing companies to subsidise their operational costs [2].

Sources :

[1] NLCF, *Materials on Price, Demand and Supply of Livestock Products,* various years, Seoul.
[2] MAF budget data.

Table 13. **Detail of general policy measures – Aggregate of all commodities, 1979-97**

Producer Subsidy Equivalent	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
Adjusted value of production	Won bn	4 582	6 011	6 570	7 162	7 693	8 100	8 311	10 092	10 395	11 250	11 501	11 937	11 793	12 982	13 386	15 664	15 872
A. Market price support	Won bn	2 565	3 746	4 318	4 632	5 047	5 317	5 690	7 179	7 514	8 195	8 299	8 672	8 546	9 043	9 810	10 660	10 239
B. Levies	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C. Direct payments	Won bn	13	0	8	1	0	7	14	4	2	127	130	151	121	125	101	107	84
Deficiency payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Area and headage payments	Won bn	2	0	1	1	0	0	0	0	0	0	0	0	6	10	12	9	11
Disaster payments	Won bn	11	0	7	0	0	0	14	4	2	4	0	4	5	26	9	5	0
Diversion payments	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alleviation of debt	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Direct household income payments	Won bn	0	0	0	0	0	7	0	0	0	123	130	147	110	89	80	93	73
D. Reduction of input costs	Won bn	9	15	12	22	13	15	37	75	109	157	178	219	256	312	389	414	488
Capital grants	Won bn	2	6	5	6	5	5	7	9	14	17	33	37	67	99	174	168	163
Interest concessions	Won bn	5	4	3	5	4	3	13	46	47	94	104	126	118	145	165	171	225
Fertilisers	Won bn	0	0	0	0	0	0	0	0	7	4	3	16	19	22	10	24	37
Irrigation	Won bn	0	0	0	0	0	0	0	18	35	36	37	39	37	38	38	46	47
Pesticides	Won bn	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grass	Won bn	1	4	4	5	3	3	4	2	3	3	1	3	13	7	1	0	13
Animal breeding improvement	Won bn	0	1	2	2	2	1	1	1	1	1	1	1	0	0	0	0	0
Seeds	Won bn	1	–2	–1	4	–1	3	13	0	3	3	0	–2	2	1	1	5	2
E. General services	Won bn	113	149	170	194	173	212	249	271	326	357	386	410	448	494	688	1 017	1 150
Research, advisory, training	Won bn	12	21	25	26	28	30	31	39	46	55	66	81	92	107	170	193	179
Inspection	Won bn	4	6	7	7	8	9	10	12	13	14	16	19	20	20	22	32	35
Pest and disease control	Won bn	2	4	5	4	7	8	5	5	6	8	10	10	13	14	16	30	26
Structures/Infrastructures	Won bn	94	118	132	157	130	165	203	214	261	279	294	300	324	353	481	762	910
Marketing and promotion	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F. Sub-national	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G. Other	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total other support (D + E + F + G)	Won bn	122	164	182	216	186	227	286	347	435	513	563	630	704	806	1 077	1 431	1 638
Gross total PSE	Won bn	2 700	3 910	4 508	4 848	5 233	5 551	5 990	7 529	7 951	8 835	8 992	9 453	9 371	9 974	10 989	12 198	11 961
Feed adjustment	Won bn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net total PSE	Won bn	2 700	3 910	4 508	4 848	5 233	5 551	5 990	7 529	7 951	8 835	8 992	9 453	9 371	9 974	10 989	12 198	11 961
Percentage PSE	%	59	65	69	68	68	69	72	75	76	79	78	79	79	77	82	78	75
Net total PSE (US$ mn)	***US$ mn***	***4 555***	***5 346***	***5 808***	***6 015***	***6 012***	***6 298***	***7 283***	***10 306***	***11 842***	***12 479***	***12 257***	***12 106***	***11 674***	***12 411***	***14 252***	***15 156***	***12 576***

p: provisional.

Table 13. **Detail of general policy measures – Aggregate of all commodities, 1979-97** *(cont.)*

Consumer Subsidy Equivalent	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
Adjusted value of consumption	Won bn	6 403	7 843	8 413	8 686	9 126	9 742	9 927	11 404	12 181	13 403	14 623	15 478	15 705	16 938	18 726	19 968	19 559
A. Market transfers	Won bn	–3 195	–4 355	–4 854	–4 836	–5 157	–5 626	–5 976	–7 051	–7 668	–8 740	–9 515	–10 007	–10 310	–10 521	–12 325	–11 788	–10 614
B. Other transfers	Won bn	6	4	3	5	21	41	59	31	37	39	105	83	183	217	245	74	218
C. Total CSE	Won bn	–3 189	–4 351	–4 851	–4 830	–5 136	–5 585	–5 917	–7 021	–7 630	–8 701	–9 410	–9 924	–10 127	–10 303	–12 080	–11 713	–10 396
D. Percentage CSE	%	–50	–55	–58	–56	–56	–57	–60	–62	–63	–65	–64	–64	–64	–61	–65	–59	–53
Total CSE (US$)	***US$ mn***	***–5 410***	***–5 948***	***–6 251***	***–5 993***	***–5 900***	***–6 337***	***–7 195***	***–9 610***	***–11 365***	***–12 290***	***–12 828***	***–12 709***	***–12 616***	***–12 821***	***–15 667***	***–14 555***	***–10 931***

p: provisional.

Notes to Table 13 (Aggregate of all commodities)
Details of General Policy Measures [1]

Aggregate of all commodities

Definitions and Notes:

I. Market price support: Sum of market price support for all PSE commodities.

B. Levies: Not applicable.

C. Direct payments:

Area and headage payments: Payments from the LIDF to beef and pigmeat producers.

Disaster payments: Payments in-kind (rice) from the General Account and the Special Account for Agro-Fisheries and Rural Structure Improvement to farmers who lost more than 30 per cent of their agricultural production because of natural disasters. The compensation is proportional to the loss. Payments from the General Account to farmers who lost more than 50 per cent of their rice production due to extreme cold weather in Winter 1980.

Diversion payments: Subsidies from the LIDF to dairy farmers participating in the milk production reduction programme and loans to dairy farmers who increased their meat production.

Alleviation of debt: Subsidies from the General account and the LIDF to cattle breeding farmers with a heavy debt burden in order to alleviate this burden by extending the repayment period, reducing interest rates and providing school grants and food aid.

Direct household income payments: Support from the General Account to smaller farmers' and fishermen's households to reduce their debt burden; government contribution through the Special Account for Agro-Fisheries and Rural Structure Improvement to an insurance scheme for farmers related to working accidents; tuition support for smaller farmers' children; and government contribution to a savings programme for accession to property.

D. Reduction of input costs

Capital grants: Various subsidies from the General Account, the LIDF, the Agriculture and Fisheries Development Fund and the Special Account for Agro-Fisheries and Rural Structure Improvement in order to promote structural adjustment and investment in livestock industries, to develop mechanisation in Korean agriculture, to increase the size of farms, to help farmers to invest in facilities to deal with livestock wastes and to restore the quality of polluted soils. Such programmes often include the provision of loans with interest concessions.

Interest concessions: The LIDF provides a number of loans with reduced interest rates to promote structural adjustment and investments in the livestock industry or to help livestock farmers to buy inputs, such as animals and feed. As for capital grants, loans are intended to increase mechanisation and investments in farming equipment and facilities and to improve farm land structures. There are also specific loans to help young farmers to start business.

Fertiliser: The NACF is compensated for its losses in selling fertilisers at a lower price than it bought them through the General Account.

Irrigation: The General Account supports the operational cost of the Farmland Improvement Association which is in charge of operating and maintaining larger irrigation facilities.

Pesticides: The NACF is compensated by the General Account for its losses in handling and selling pesticides to farmers.

Feed: Subsidies and/or loans are provided by the LIDF to livestock farmers to reclaim and establish pastures and to help them to produce grass efficiently.

Animal breeding improvement: The LIDF finances a number of programmes to improve the quality of Korean livestock. They include artificial insemination, productivity tests and the provision of imported high quality breeds and of advice to raise them.

Seeds: Producers' group receive funds from the General Account to install collective seedling facilities to produce high quality seeds for rice and vegetables. The production and distribution of certified seeds is operated and financed by the government through the Seed Fund of the RDA but producers pay the full cost. The net benefit or loss of this activity is taken into account in this category.

Machinery: Grants and loans to promote mechanisation were included in capital grants and interest concessions respectively.

E. General services

Research, advisory, training: Most research and extension programmes are carried out and financed by the General Account of the RDA, but also by the Agriculture and Fisheries Development Fund and the Special Account for Agro-Fisheries and Rural Structure Improvement. Programmes specific to the livestock sector are funded by the LIDF.

Inspection: Agricultural products inspection services are financed by the General Account or the Special Account for Agro-Fisheries and Rural Structure Improvement. The General Account also funds inspection services of agricultural chemicals and machinery while the LIDF deals with the inspection of mixed feed.

Pest and disease control: This heading groups expenditures from the General Account, the Special Account for Agro-Fisheries and Rural Structure Improvement or the LIDF to control pests by spraying pesticides in case of a pest outbreak, to control animal disease and to operate quarantine services for plants and animals. RDA expenditures to test drugs and pesticides are also included.

Structures/infrastructures: Structure/infrastructure expenditures are to reclaim, restore and reorganise land, develop irrigation and drainage, improve water supply and build farm roads. They come from the General Account and the Special Account for Agro-Fisheries and Rural Structure Improvement.

Marketing and promotion: There was no government expenditures for the marketing and promotion of PSE commodities during the period.

F. Sub-national: Not applicable.

G. Other: Tax concessions: data not available.

X. Feed adjustment: Not applicable.

Consumer subsidies: Milk processing companies supply milk to elementary schools. Those expenditures are funded by the LIDF. Co-operatives and/or downstream companies receive government funds to subsidise their operational costs and to operate price stabilisation programmes by purchasing agricultural products at a higher price than they sell them. Such support exists for most products. It is financed by the LIDF for livestock products and by the Agriculture and Fisheries Development Fund, the Special Account for Agro-Fisheries and Rural Structure Improvement for corn, soybeans and rapeseed and by the Foodgrain Management Fund or the Special Account for Foodgrain Management for cereals.

Sources :

[1] All data in this Section come from MAF budget data unless, otherwise, specified.

Table 14. **Reference prices**

'000 won/tonne

	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
Wheat	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Maize	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Barley	131	139	149	126	107	102	111	135	129	123	113	122	127	108	138	162	160
Rice	230	227	186	191	200	178	149	192	201	176	192	181	146	271	190	331	363
Soybeans	189	202	205	254	222	199	178	201	215	187	195	197	206	219	205	250	314
Refined sugar	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Milk	89	121	112	101	82	63	88	108	106	88	95	112	112	118	140	151	161
Beef and veal	1 506	1 871	1 909	1 985	1 958	1 915	1 966	1 887	2 012	2 040	2 132	2 357	2 398	2 275	2 291	2 240	2 330
Pigmeat	879	1 380	1 229	1 308	1 392	1 610	1 509	1 168	1 095	1 407	1 320	1 226	1 343	1 236	1 241	1 634	1 898
Poultrymeat	836	952	1 039	1 131	1 081	1 079	889	922	958	1 012	1 016	1 069	1 002	983	906	925	1 052
Sheepmeat	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Wool	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Eggs	636	653	661	705	807	1 186	804	793	773	917	1 121	832	936	1 088	1 111	1 249	1 310

n.a.: not applicable ; p: provisional.

Notes to Table 14
Reference Prices

Definitions and Notes:

Barley: Weighted average of reference prices for unhulled barley and malting barley. The reference price for unhulled barley is the US export price of second grade barley, f.o.b., (annual average price of Portland cash grain price) plus transportation costs (9.48 per cent) from 1979 to 1994 [1] and the Korean average import price of ordinary barley in unhulled equivalent, c.i.f., from 1995 [3]. The reference price for malting barley is the average Japanese price of malting barley imported from Australia from 1979 to 1988 [2] and the Korean average import price of malting barley in unhulled equivalent, c.i.f., from 1989 [3].

Rice: Chinese export price of rice, f.o.b., plus transportation costs (3 per cent) [5].

Soybeans: Korean average import price, c.i.f. [3].

Milk: Farm gate price of milk at actual fat content in New Zealand [6], plus transportation cost for butter and skim-milk powder in milk equivalent (56 kg and 82 kg per tonne of milk, respectively) from New Zealand to Korea [6], adjusted to Korea's fat content [7].

Beef and veal: From 1979 to 1998, US choice direct steers, Nebraska, 1100-1300 lb [8] plus transportation costs from the US to Korea [8]. Since 1989, unit value of Korean imports of grain-fed beef from Canada and the US, in carcass weight equivalent [9].

Pigmeat: Implicit pigmeat reference price for Japanese PSE calculation, *i.e.*, US wholesale price plus transportation and insurance costs [4].

Poultrymeat: Implicit poultrymeat reference price for the New Zealand PSE calculation, *i.e.* unit value of US exports of poultrymeat, adjusted for EEP [10] plus 20 per cent transportation costs.

Eggs: Implicit egg reference price for the Japanese PSE calculation, *i.e.* the wholesale price of eggs in Japan adjusted for the tariff [4].

Sources :

[1] USDA, FAS database.

[2] MAFF Japan, Japanese exports and imports published by the Japanese Tariff Association.

[3] Korean Customs Services (KCS), *Statistical Yearbook on Foreign Trade,* various years, Seoul.

[4] OECD PSE/CSE Tables for Japan.

[5] FAO *Trade Yearbook*, various years, *Chinese Trade Yearbook*, 1996.

[6] Information provided directly by the New Zealand Ministry of Agriculture and Fisheries.

[7] MAF, Korea.

[8] USDA, *Agricultural Outlook* (AGLINK database).

[9] LPMO.

[10] OECD PSE/CSE Tables for New Zealand.

Table 15. **Producer Subsidy Equivalent – All commodities**

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
Wheat																		
Total PSE	won bn	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Percentage PSE	%	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Producer NAC		n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Maize																		
Total PSE	won bn	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Percentage PSE	%	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Producer NAC		n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Other cereals[1]																		
Total PSE	won bn	178	203	230	266	219	197	233	269	291	273	269	271	288	228	272	274	181
Percentage PSE	%	51	60	59	68	74	78	78	75	80	84	89	89	90	94	92	91	93
Producer NAC		2	2.4	2.3	2.9	3.6	4.1	3.9	3.5	4.2	4.9	5.9	6.0	6.0	7.5	6.0	5.2	5.4
Rice																		
Total PSE	won bn	1 783	2 678	3 101	3 357	3 674	4 194	4 565	5 471	5 761	6 108	6 155	6 591	6 476	6 416	6 905	8 304	8 527
Percentage PSE	%	64	72	78	78	79	84	89	86	87	91	91	93	97	89	97	92	92
Producer NAC		3	3.3	4.1	4.1	4.3	5.2	6.6	5.7	5.9	7.2	6.9	7.8	10.3	5.7	8.7	5.7	5.3
Oilseeds																		
Total PSE	won bn	93	129	143	143	134	126	159	208	235	216	179	193	215	211	272	279	262
Percentage PSE	%	68	76	78	72	74	79	85	85	85	88	88	90	93	94	99	99	96
Producer NAC		3	3.7	4.1	3.2	3.6	4.2	5.4	5.3	5.3	6.0	6.0	6.6	7.1	7.2	9.3	8.0	6.4
Sugar (refined equivalent)																		
Total PSE	won bn	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Percentage PSE	%	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Producer NAC		n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Crops																		
Total PSE	won bn	2 054	3 009	3 474	3 766	4 027	4 517	4 957	5 948	6 286	6 597	6 603	7 054	6 979	6 854	7 448	8 857	8 970
Percentage PSE	%	63	71	76	77	78	83	88	85	87	91	91	93	97	89	97	92	92
Producer NAC		3	3.2	3.8	3.9	4.2	5.1	6.3	5.5	5.7	7.0	6.9	7.7	9.9	5.8	8.6	5.7	5.3

Table 15. **Producer Subsidy Equivalent – All commodities** *(cont.)*

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
Milk																		
Net total PSE	won bn	85	113	145	181	245	303	335	358	465	504	525	523	558	567	608	630	615
Net percentage PSE	%	69	63	65	69	76	82	74	68	73	78	78	74	76	75	73	71	71
Producer NAC		3	2.6	2.8	3.1	4.0	5.2	3.7	3.0	3.5	4.3	4.2	3.6	3.7	3.5	3.2	3.0	3.0
Beef and veal																		
Net total PSE	won bn	265	324	393	505	419	434	424	666	564	659	781	819	894	1 134	1 378	1 310	1 264
Net percentage PSE	%	59	66	69	66	56	51	50	65	68	70	73	72	68	72	76	74	67
Producer NAC		2	2.8	3.0	2.8	2.2	2.0	2.0	2.8	3.0	3.2	3.4	3.3	2.9	3.1	3.5	3.2	2.6
Pigmeat																		
Net total PSE	won bn	246	356	373	261	428	351	188	414	355	789	925	683	689	971	968	849	588
Net percentage PSE	%	50	49	47	33	43	37	22	42	36	49	56	45	42	53	53	40	29
Producer NAC		2	1.9	1.9	1.5	1.8	1.6	1.3	1.7	1.6	2.0	2.2	1.8	1.7	2.1	2.0	1.6	1.4
Poultry																		
Net total PSE	won bn	58	74	61	78	95	79	115	180	187	225	250	259	261	447	505	533	488
Net percentage PSE	%	40	42	30	34	39	34	47	58	56	56	55	50	52	68	75	75	73
Producer NAC		2	1.7	1.4	1.5	1.6	1.5	1.8	2.3	2.2	2.2	2.1	1.9	2.0	2.8	3.3	3.4	3.0
Sheepmeat																		
Net total PSE	won bn	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Net percentage PSE	%	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Producer NAC		n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Wool																		
Net total PSE	won bn	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Net percentage PSE	%	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Producer NAC		n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Eggs																		
Net total PSE	won bn	–7	35	61	57	19	–133	–31	–37	94	62	–92	114	–10	1	82	18	36
Net percentage PSE	%	–3	18	26	23	7	–51	–12	–13	24	15	–25	25	–3	0	14	3	6
Producer NAC		1	1.2	1.3	1.3	1.1	0.7	0.9	0.9	1.3	1.2	0.8	1.3	1.0	1.0	1.2	1.0	1.1
Livestock products																		
Net total PSE	won bn	646	902	1 034	1 082	1 206	1 034	1 033	1 581	1 664	2 238	2 389	2 398	2 392	3 120	3 541	3 341	2 991
Net percentage PSE	%	48	51	51	47	47	39	39	51	53	56	56	55	52	59	62	55	49
Producer NAC		2	2.0	2.0	1.9	1.9	1.6	1.6	2.0	2.1	2.2	2.2	2.2	2.0	2.3	2.4	2.1	1.9
All products																		
Net total PSE	won bn	2 700	3 910	4 508	4 848	5 233	5 551	5 990	7 529	7 951	8 835	8 992	9 453	9 371	9 974	10 989	12 198	11 961
Net percentage PSE	%	59	65	69	68	68	69	72	75	76	79	78	79	79	77	82	78	75
Producer NAC		2	2.7	3.0	2.9	3.0	3.0	3.3	3.6	3.8	4.0	3.9	4.0	4.0	3.6	4.2	3.5	3.2
Net total PSE	***US$ mn***	***4 555***	***5 346***	***5 808***	***6 015***	***6 012***	***6 298***	***7 283***	***10 306***	***11 842***	***12 479***	***12 257***	***12 106***	***11 674***	***12 411***	***14 252***	***15 156***	***12 576***

p: provisional;
n.c.: not calculated.
1. Barley.

Table 16. **Consumer Subsidy Equivalent – All commodities**

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
Wheat																		
Total CSE	won bn	–15	–26	–35	–20	–21	–19	–19	–13	–10	–7	–12	–14	–14	–19	–12	–2	–4
Percentage CSE	%	–6	–9	–11	–5	–5	–5	–5	–3	–3	–3	–3	–3	–3	–3	–3	0	–1
Consumer NAC		1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Maize																		
Total CSE	won bn	–62	–76	–105	–47	–47	–47	–57	–61	–58	–59	–42	–52	–49	–49	–36	–42	–32
Percentage CSE	%	–21	–20	–19	–10	–11	–12	–14	–13	–9	–9	–8	–8	–8	–8	–4	–3	–2
Consumer NAC		1	1.3	1.2	1.1	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0
Other grains[1]																		
Total CSE	won bn	–166	–191	–216	–251	–210	–188	–219	–254	–273	–251	–246	–250	–262	–207	–241	–236	–153
Percentage CSE	%	–41	–53	–60	–63	–61	–70	–72	–73	–77	–77	–77	–80	–78	–75	–75	–73	–64
Consumer NAC		2	2.1	2.5	2.7	2.5	3.4	3.5	3.7	4.3	4.3	4.4	4.9	4.5	4.0	4.0	3.7	2.7
Rice																		
Total CSE	won bn	–2 069	–2 667	–2 905	–3 115	–3 456	–4 142	–4 407	–4 808	–5 116	–5 429	–5 730	–6 192	–6 667	–5 975	–7 057	–7 012	–6 729
Percentage CSE	%	–61	–68	–75	–75	–76	–80	–84	–82	–82	–85	–84	–85	–87	–78	–85	–80	–78
Consumer NAC		3	3.2	3.9	3.9	4.1	5.0	6.3	5.5	5.5	6.7	6.4	7.2	9.3	5.1	7.7	5.1	4.7
Oilseeds																		
Total CSE	won bn	–106	–145	–164	–153	–149	–140	–168	–219	–246	–227	–120	–203	–229	–222	–280	–272	–244
Percentage CSE	%	–43	–48	–47	–39	–37	–36	–44	–45	–48	–49	–28	–40	–47	–43	–47	–40	–30
Consumer NAC		2	1.9	1.9	1.6	1.6	1.6	1.8	1.8	1.9	2.0	1.5	1.7	1.9	1.8	1.9	1.7	1.4
Sugar (refined equivalent)																		
Total CSE	won bn	–43	–94	–97	–93	–75	–71	–63	–52	–43	–38	–42	–39	–32	–31	–34	–36	–38
Percentage CSE	%	–17	–29	–29	–29	–26	–23	–20	–17	–13	–12	–12	–10	–8	–7	–7	–7	–7
Consumer NAC		1	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Crops																		
Total CSE	won bn	–2 462	–3 198	–3 522	–3 680	–3 957	–4 607	–4 933	–5 406	–5 746	–6 010	–6 191	–6 751	–7 252	–6 502	–7 660	–7 600	–7 200
Percentage CSE	%	–51	–58	–61	–60	–62	–66	–70	–68	–68	–71	–70	–70	–73	–64	–69	–63	–60
Consumer NAC		2	2.4	2.5	2.5	2.6	3.0	3.4	3.2	3.2	3.5	3.4	3.4	3.9	2.9	3.4	2.7	2.5

Table 16. **Consumer Subsidy Equivalent – All commodities** *(cont.)*

	Units	1979-81	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997p
Milk																		
Total CSE	won bn	–82	–112	–143	–174	–232	–292	–326	–348	–420	–508	–532	–514	–554	–567	–582	–684	–708
Percentage CSE	%	–66	–60	–63	–67	–74	–78	–71	–65	–70	–74	–74	–70	–71	–69	–66	–64	–64
Consumer NAC		3	2.6	2.8	3.1	3.9	5.0	3.6	2.9	3.4	4.1	4.0	3.4	3.5	3.3	2.9	2.8	2.8
Beef and veal																		
Total CSE	won bn	–319	–541	–663	–565	–399	–392	–380	–713	–857	–1 160	–1 657	–1 709	–1 468	–1 912	–2 417	–2 177	–1 542
Percentage CSE	%	–57	–64	–66	–63	–51	–47	–44	–63	–65	–67	–69	–67	–63	–66	–69	–66	–53
Consumer NAC		2	2.8	2.9	2.7	2.1	1.9	1.8	2.7	2.9	3.1	3.2	3.1	2.7	3.0	3.2	3.0	2.3
Pigmeat																		
Total CSE	won bn	–241	–349	–366	–255	–421	–338	–177	–395	–334	–754	–900	–615	–631	–927	–905	–760	–474
Percentage CSE	%	–48	–48	–46	–33	–43	–36	–21	–40	–35	–48	–54	–42	–39	–50	–48	–36	–24
Consumer NAC		2	1.9	1.9	1.5	1.7	1.6	1.3	1.7	1.5	1.9	2.2	1.7	1.7	2.0	1.9	1.6	1.3
Poultry																		
Total CSE	won bn	–56	–72	–59	–76	–90	–74	–110	–166	–177	–211	–229	–232	–239	–403	–452	–495	–460
Percentage CSE	%	–38	–41	–29	–33	–37	–32	–45	–54	–53	–54	–51	–46	–48	–61	–66	–68	–64
Consumer NAC		2	1.7	1.4	1.5	1.6	1.5	1.8	2.2	2.1	2.2	2.0	1.9	1.9	2.6	3.0	3.2	2.8
Sheepmeat																		
Total CSE	won bn	–1	–1	–1	–1	–1	–1	–1	–2	–2	–1	–1	–3	–2	–2	–3	–2	–2
Percentage CSE	%	–20	–20	–20	–23	–23	–23	–23	–23	–23	–23	–23	–23	–23	–23	–22	–22	–22
Consumer NAC		1	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Wool																		
Total CSE	won bn	–38	–45	–37	–25	–20	–16	–22	–30	–5	–4	–4	–4	–3	–4	–5	–3	–2
Percentage CSE	%	–34	–29	–28	–20	–15	–10	–11	–12	–3	–3	–3	–3	–2	–2	–3	–2	–2
Consumer NAC		2	1.4	1.4	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Eggs																		
Total CSE	won bn	9	–33	–60	–55	–17	135	33	40	–89	–51	104	–97	24	14	–57	7	–7
Percentage CSE	%	4	–17	–25	–22	–7	52	13	14	–23	–12	28	–21	6	3	–10	1	–1
Consumer NAC		1	1.2	1.3	1.3	1.1	0.7	0.9	0.9	1.3	1.1	0.8	1.3	0.9	1.0	1.1	1.0	1.0
Livestock products																		
Total CSE	won bn	–727	–1 152	–1 330	–1 151	–1 179	–978	–984	–1 614	–1 884	–2 690	–3 219	–3 173	–2 875	–3 801	–4 420	–4 114	–3 196
Percentage CSE	%	–46	–50	–51	–45	–43	–35	–34	–46	–50	–54	–56	–54	–50	–55	–57	–52	–43
Consumer NAC		2	2.0	2.0	1.8	1.8	1.5	1.5	1.9	2.0	2.2	2.3	2.2	2.0	2.3	2.4	2.1	1.8
All products																		
Total CSE	won bn	–3 189	–4 351	–4 851	–4 830	–5 136	–5 585	–5 917	–7 021	–7 630	–8 701	–9 410	–9 924	–10 127	–10 303	–12 080	–11 713	–10 396
Percentage CSE	%	–50	–55	–58	–56	–56	–57	–60	–62	–63	–65	–64	–64	–64	–61	–65	–59	–53
Consumer NAC		2	2.2	2.4	2.3	2.3	2.4	2.5	2.6	2.7	2.9	2.8	2.8	2.9	2.6	2.9	2.4	2.2
Net total CSE	US$ mn	–5 410	–5 948	–6 251	–5 993	–5 900	–6 337	–7 195	–9 610	–11 365	–12 290	–12 828	–12 709	–12 616	–12 821	–15 667	–14 555	–10 931

p: provisional;
n.c.: not calculated.
1. Barley.

NOTES

1. The numbering of PSE/CSE tables is the same for all OECD countries for which the PSE/CSE calculations have been carried out and is retained whether or not a commodity is actually included in the calculations.
2. Producer nominal assistance coefficients (NACp), as defined in this report, are broader concepts than producer nominal protection coefficients (NPC). Conceptually, they lie between the nominal and the effective rate of assistance used in the literature. See, for example, G. Miller (1986), *The Political Economy of International Agricultural Policy Reform*, Department of Primary Industry, Canberra; H. Haszler and D. Parsons (1987), "The Price Adjustment Gap and World Agricultural Policy Reform", *Quarterly Review of the Rural Economy*, Vol. 9, No. 2, Australian Bureau of Agricultural Resource Economics.
3. See OECD (1992), *Agricultural Policies, Markets and Trade: Monitoring and Outlook 1992*, for a more complete description.
4. The Fisher ideal index has been developed expressly to deal with large changes in weights when measuring economic aggregates. The Fisher ideal index has been demonstrated to be a "superlative" index, meaning that in situations where quantities produced and consumed undergo large changes between year and $t + 1$, the Fisher ideal index of changes in prices and unit support is the best approximation of the underlying "true" theoretical index. The changes in unit aggregates, in other words, do not suffer a bias.
5. The Laspeyres price index is a weighted average of price changes between year *1* and year 0 with the weights being the quantity for year 0:

   $$L = \frac{\Sigma P_1 \cdot Q_0}{\Sigma P_0 \cdot Q_0}$$

   The Paasche price index is a weighted average of price changes between year 1 and year 0 with the weights being the quantity for year 1:

   $$L = \frac{\Sigma P_1 \cdot Q_1}{\Sigma P_0 \cdot Q_1}$$

   The Fisher ideal index is the geometric average of the Laspeyres and Paasche indices:

   $$F = \sqrt{L \cdot P} = \sqrt{\left(\frac{\Sigma P_1 \cdot Q_0}{\Sigma P_0 \cdot Q_0}\right) \cdot \left(\frac{\Sigma P_1 \cdot Q_1}{\Sigma P_0 \cdot Q_1}\right)}$$

   Readers interested in the properties of the Fisher ideal index are referred to the following papers: W.E. Diewert, "Fisher ideal output, input and productivity indexes revisited", *Journal of Productivity Analysis*, No. 3, 1992, pp. 211-248; W.E. Diewert, "Exact and superlative index numbers", *Journal of Econometrics*, No. 4, 1976, pp. 115-145; and W. Eichhorn, R. Henn, O. Optiz and R.W. Shephard (editors), *Theory and Application of Economic Indexes*, Physica Verlag, Wurzburg, 1978.
6. It may not therefore equate exactly with the actual reference price used in estimating the PSE, as transportation costs, quality adjustment factors, etc., are all reflected in this implicit price.
7. *OECD Economic Outlook* database.

Annex IV

GLOSSARY OF PSE/CSE AND POLICY TERMS

This glossary is designed to provide a concise list the main PSE, CSE and policy terms used in this report.

Administered price: Prices that are fixed by policy makers in order to determine, directly or indirectly, domestic market or producer prices (guaranteed prices, concerted prices, minimum prices, government purchase or resale price).

Border price: See Reference price.

Calendar year: The PSE and CSE estimates are given on a *calendar year* basis. However, for crops, in many cases, production and price data are available only on a marketing year basis. In such cases, in order to preserve comparability of the PSE and CSE estimates among countries and commodities, *crop year* data are assigned to the closest calendar year. Budget data are in all cases on a *fiscal year* basis and budget items are in general allocated to individual commodities when they actually appear in the budget.

Consumer Subsidy Equivalent, CSE: An indicator of the value of the monetary transfers to consumers resulting from agricultural policies in a given year. When negative, it measures the implicit tax imposed on consumers by agricultural policy. The major component is *market transfers* due to *market price support* to production. It also includes *other transfers* such as subsidies to consumption from government budget. The CSE can be expressed in money terms (*total CSE*), in percentage terms (*percentage CSE*) or in money terms per tonne of consumption (*unit CSE*).

Direct payments: Budgetary payments paid directly to producers to support their income. The category includes a wide range of different types of payments, such as deficiency payments, area and headage payments, disaster payments, diversion payments for temporary retirement of resources, household income payments, each which may have different effects on the agricultural sector.

Disaster payments: Budgetary payments to compensate farmers for the adverse effects of natural events such as droughts, floods and diseases.

Farm gate price: see Producer price.

Feed adjustment: The sum of the additional costs of animal feed to livestock producers resulting from *market price support* on feeds for which *PSEs* are calculated and taxes on feeds and processed feedstuffs. Its purpose is to allow commodity *total PSEs* to be summed up to give a total for the agricultural sector without double counting the market price support paid by livestock producers to producers of PSE feed grains and oilseeds, and also to deduct any other taxes on feeds or on processed feedstuffs.

Government purchase price: Administered price at which the government buys part of domestic production.

Government resale price: Administered price at which the government sells its stocks in the domestic market.

Gross total PSE: Total value of transfers to agriculture by means of *market price support* (net of *levies on output*), *direct payments* and other support, but before deduction of the *feed adjustment*. In the case of crop products, where there is no animal feed input, gross and *net total PSEs* are identical.

Headage payment: Direct payments made to individual producers on the basis of the number of head of a specific type of livestock.

Import quota: A quantitative restriction on the level of imports, imposed by a country.

Interest concession: A reduction, compared with commercial interest rates, in the interest rate charged on a loan taken out by a farmer, typically provided directly by a government agency or by a government grant to the lending bank (in the case of a commercial loan).

Levies on output: Taxes on farm output which reduce the price received by producers as a result of *market price support*. None applied in Korea for PSE commodities over the review period.

Market price support, MPS: Transfers to producers resulting from measures that raise prices to consumers of farm commodities by way of tariffs, import quotas, *administered prices* or trade licensing arrangements. Market price support per unit of volume (tonne) of production is referred to as the *unit MPS*.

Market transfers: Transfers to (when positive), or from (when negative) consumers due to *market price support* policies.

Mark-up: Price margin incurred by a state trading enterprise through its purchasing and selling operation. An import mark-up. An import mark-up is maintained at the border on a given commodity to be imported, as defined in the GATT (1994).

Net total PSE: *Gross total PSE* minus the *feed adjustment*. In the case of crop products, where there is no animal feed input, the gross and net total PSEs are identical.

Nominal assistance coefficient, NAC: Nominal Assistance Coefficients are indicators of the effective price wedge between domestic and world markets created by agricultural policies. The producer NAC is the ratio of the *border price* in national currency plus the unit PSE, relative to the border price. It expresses the transfers to producers in relation to border prices. The higher the producer NAC, the greater the level of support. The consumer NAC is the ratio of the border price in national currency plus the unit CSE, relative to the border price. It is an indicator of the gap between domestic consumer prices (measured at the farm gate) and world prices. A consumer NAC higher (lower) than one is equivalent to an implicit tax (subsidy) to consumers.

Oilseeds: Generally, seeds grown primarily for the production of edible (i.e. cooking) oils. When used as a collective term in the context of *PSE* and *CSE* estimates, the composition generally refer to soya beans, rapeseed and sunflower. Soyabeans are the only oilseed with a significant production in Korea.

Other grains: Generally refers to cereal grains other than wheat, maize and rice that are used primarily for animal feed or brewing (sorghum and barley). Barley is the only other grain with a significant production in Korea.

Other support: The value of transfers other than market price support and direct payments that are included in the *PSE* calculation. These include explicit or implicit subsidies on purchased farm inputs, farm credit, and government transfers to agricultural research and development, extension services, training and agricultural infrastructure. This category also includes sub-national assistance measures and taxation concessions specific to agriculture.

Other transfers: The value of those budgetary transfers to consumers included in the *CSE* calculation.

Percentage PSE: The *gross total PSE* or, in the case of livestock products, *net total PSE*, expressed as a percentage of the value of production, valued at the farm gate. A *percentage CSE* is also calculated, which measures the implicit tax on consumers (if negative), or the implicit subsidy on consumption (if positive).

Producer price: The average price or unit value received by farmers for a specific agricultural commodity produced within a specified 12-month period. This price is measured at the *farm gate* -- that is, at the point that the commodity leaves the farm -- and therefore does not incorporate cost of transport and processing.

Producer Subsidy Equivalent, PSE: An indicator of the value of monetary transfers to agriculture resulting from agricultural policies in a given year. Both transfers from consumers of agricultural products (through domestic *market price support*) and transfers from taxpayers (through budgetary or tax expenditures) are included. The PSE can be expressed in money terms (*total PSE*), in percentage terms (*percentage PSE*), or in money terms per tonne of production (*unit PSE*).

PSE commodity: A commodity that belong to the OECD standard list of 17 commodities (wheat, maize, barley, oats, sorghum, rice, rapeseed, soyabeans, sunflower, sugarcane or sugarbeet, milk, beef and veal, pigmeat, poutrymeat, sheepmeat, wool, eggs) and which production value exceeds one per cent of the gross value of total agricultural production. In Korea, wheat, maize, sorghum, oats, rapeseed, sunflower, sugar, sheepmeat and wool were not included in the list of commodities for which PSEs have been calculated.

Reference price: The import (c.i.f.) or export (f.o.b.) price of a commodity. An implicit reference price may be calculated as the *producer price* in the foreign country less the *unit MPS* and may differ slightly from the explicit reference price. Board of trade quotations may also be used as reference price.

Supply control: A wide range of measures designed to affect the level of production or supply, including measures which restrict output directly (such as milk quotas) and those which restrict the use of an input (production licences, set-aside). None applied in Korea for PSE commodities over the review period.

Support price: See Administered price.

Tariff: A tax imposed on commodity imports. A tariff may be either a specific tariff (fixed charge per unit of product imported) or an *ad valorem* tariff (a fixed percentage of value). See also *Variable Import Levy*.

Tariffication: The conversion of non-tariff barriers to tariffs.

Tariff quota: A quantitative threshold (quota) on imports during a given period beyond which a higher tariff is applied. The lower tariff rate applies to imports within the quota.

Tariff-rate quota: A term used interchangeably with the term tariff quota.

Total consumption: The total volume of domestic consumption (in metric tonnes) of a PSE commodity in a given crop year.

Total production: The total volume of production (in metric tonnes) of a PSE commodity at the farm level. This includes the production used for human and animal consumption on the farm, and the production sold to state-owned agencies and the private sector.

Total PSE: The aggregate PSE in money terms. For livestock products, the term "net *total PSE*" refer to monetary transfers to producers after the deduction of the *feed adjustment*.

Total transfers: An indicator defined as the sum of all transfers from taxpayers and all transfers from consumers resulting from agricultural policies, less budget revenues from tariffs on imports.

Unit direct payments: The total value of *direct payments* to production // divided by the volume of production, measured in tonnes.

Unit market price support: The total transfers to production resulting from measures that tax consumers of farm commodities, divided by the volume of commodity production.

Unit PSE: The *gross* or *net total PSE* for a commodity, divided by the volume of its production in tonnes. A *unit CSE* is similarly calculated.

Uruguay Round: The eighth round of multilateral trade negotiations conducted within the framework of the GATT. Launched at Punta del Este, Uruguay, in 1986 and concluded in December 1993, the final Uruguay Round agreement, signed in Marrakech in April 1994, embraces 110 participating countries ("contracting partners") and came into effect in 1995. It is being implemented over the period to 2000 (2004 for developing countries). Korea signed the agreement as a developing country.

World price: See Reference price.

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