

Real economic growth for 2001 is forecast at 4.3 percent and is expected to rise to 5 percent in 2002. High oil prices and the slowdown in the US and Japanese economies lowered the growth rate and raised unemployment in 2001. Although the exchange rate was sufficiently low, exports did not increase as much as anticipated. Exports are expected to recover starting in the second half of 2001. The CPI was also revised to 4 percent in 2001, but is expected to stabilize at 3 percent in 2002. Foreign exchange reserves reached US\$96.2 billion as of December 2000 and remained stable due to the trade surplus in 2001. The exchange rate is expected to stabilize at around 1,300 Won per US\$1 in 2001 and in 2002.

Sharp increases in the costs of meat and vegetables have led the changes in food prices in 2000. The outbreaks of FMD and BSE in the European Union are expected to lower beef production in EU this year. Reducing per-capita rice consumption has been compensated by increasing consumption of other grains and meat. Meat consumption is expected to increase to 1.64 million tons in 2001 and 1.71 million tons in 2002. Processed food production grew by 6.1 percent, much less than the 54.7 percent growth rate of manufacturing in general between 1995 and 2000.

Demand for water in rural areas is projected at 17.9 billion m³ in 2011, of which 15.5 billion m³ will be destined for agricultural use. A comprehensive project to supply 7.2 billion m³ of water to rural areas by 2011, at an approximate cost of US\$40 billion over ten years, is being planned. Strong objections from environmental organizations are anticipated, but the need for water will only increase in the future. Establishing a central organization to oversee dispersed water management tasks will promote efficiency in water resource allocation.

Macroeconomic Situation and Outlook

Almost all of the economic institutes have revised their outlook on the Korean economy. Korea was described as catching the three rabbits of growth, prices, and balance of payments until the first half of last year, when the GDP grew by 8.8 percent. At the moment, however, prospects for the Korean economy are not as bright, at least in the short run. The abrupt change in the economic cycle can be attributed to the bursting of several bubbles of decreasing unemployment rate, rising real estate prices, and increasing export of IT products, etc. that had prevailed since 1999.

Government policy to boost employment through investments to the venture industry, such as computer soft-wear related industry or other high-risk sectors, seemed to be successful at the outset. Until the first half of 2000, the unemployment rate was down and real economic growth was sustained. During that period, relatively higher interest rates and positive prospects for the stock market were still attractive to foreign capital. Consequently, the exchange rate remained at a moderate level.

But soaring petroleum prices put a damper on the economy. Unstable stock market conditions, combined with shrinking exports, have also resulted in a depreciation of the foreign exchange rate by more than 15 percent in a year, which may cause a cost-push inflation through the higher import prices of raw materials and intermediate goods.

As a result of the sudden recession, the unemployment rate rose from 4.1 percent in 2000 to 5 percent in 2001. The interest rate (the arithmetic average of yields from guaranteed corporate bonds with a maturity of three years) also rose to 9.25 percent in 2000 but is expected to stabilize at 8.5 percent in 2001 as the economy recovers and the United States maintains a low prime lending rate to boost economic growth. The economic recession is also reflected in the stock market. The annual average stock market index fell from 806.8 in 1999 to 734.2 in 2000, and had a steep decline to 500 at the beginning of 2001. The stock market is expected to become more stable in 2002, however.

The foreign exchange rate rose from 1,145.4 Won per US\$1 in December 1999 to 1,259.7 Won per US\$1 in December 2000 and went up to 1,330 Won in April 2001. Depreciation of the Korean Won has resulted from recessions in the United States and Japan as well as a weak Japanese Yen. But the exchange rate is expected to stabilize at the level of 1,300 Won per US\$1 in 2001 and in 2002, around 10 percent higher than in 2000. Many experts note that a 10 percent depreciation in the Won implies a 1.5 percent increase in inflation in the Korean economy. Although the foreign exchange rate declined, worldwide economic institutes agreed that the Korean economy will not face a financial crisis as in 1997 since the exchange rate is determined in the international financial markets and Korea has foreign reserves of more than US\$90 billion.

The Korea Development Institute (KDI) lowered its projection for the economic growth rate from 5.1 percent to 4.3 percent in 2001 and raised its projection for the inflation rate from 3 percent to more than 4 percent. Economic slowdowns in the US and Japanese economies have direct impacts on the Korean economy because of its heavy exposure to trade. The contracting trends in both markets may have particular influence on the export of Information Technology (IT) products, an area where Korea has maintained a strong comparative advantage. Korea's share of exports to GDP has risen to 45 percent.

Many institutes expected the Korean economy to have a period of recovery after the third quarter of 2001 and would grow by 5 percent with 4 percent unemployment and 8 percent real interest rates in 2002. But recessionary pressures from the voluntary reduction in private consumption and the conservative monetary policy should be replaced with more flexible macroeconomic policies to boost Korean economic growth. Strong and consistent pursuit of structural changes in the business sector will also be required to promote economic growth in Korea, as well as a recovery of the US economy and stabilized oil prices in the external sector.

The balance of current accounts recorded a surplus of US\$11 billion, mainly due to the trade surplus of US\$11.8 billion in 2000. It is expected to shrink to between US\$5 and US\$7 billion in 2001 and in 2002. Per capita income rose to US\$9,628 in 2000, up from US\$8,551 in 1999; it is projected to increase even further, to US\$9,965 in 2001 and to US\$ 10,463 in 2002. As a result of increased exports and a trade surplus, foreign exchange reserves reached US\$96.2 billion at the end of 2000, 30 percent higher than they were at the end of 1999.

In 2000, Korean exports totaled US\$172.3 billion, a 20 percent increase over 1999. In contrast, imports increased by 34 percent and totaled US\$160.5 billion, thereby creating a trade surplus of US\$11.8 billion in 2000. The outlook for exports is not very optimistic for 2001. Exports declined for the second straight month in April and are expected to continue falling through the first half of 2001. It may begin to grow slowly in the second half of 2001 and in 2002. Korea maintained her status as a net creditor in 2000, with total foreign credit increasing by 14.8 percent to US\$166.9 billion and total debt decreasing by 0.5 percent to US\$136.3 billion, compared to 1999.

Food Prices and Consumption

Food prices went up only 0.8 percent in 2000 but are projected to rise by 4.5 percent in 2001 and by 4 percent in 2002. Costs for food consumed at home are expected to rise by almost the same rate as the overall food prices in 2001. Compared to the overall consumer price index (CPI), which rose by 2.3 percent in 2000, the increase in food prices was more modest; this is partly due to the steep fall of 14.3 percent in fruit prices during the same period. Sharp increases in the prices of meat and vegetables led the changes in food prices in 2000. The outbreak of foot and mouth disease in Korea affected the beef consumption so that beef prices dropped temporarily. However, beef prices rebounded by 8.4 percent by the end of 2000. The FMD and BSE occurred in European Union are also expected to raise the price of beef in 2001 since the supply of beef from non-EU area seems to be shorter than the world demand.

Because of the high oil prices, the CPI is expected to increase by more than 4 or 5 percent in 2001, and then stabilize at around 3 percent in 2002. Food prices are also expected to rise in 2001 because of the high exchange rate, but are projected to drop somewhat as a result of expanding imports in 2002. Prices for food consumed outside the home also increased by 0.8 percent in 2000 and are expected to rise faster than prices for food eaten at home, as the rate of participation of women in the labor markets is projected to increase in 2001 and in 2002.

Total rice consumption fell to 5.1 million tons in 2000, compared to 5.3 million tons in 1999, and is projected to increase to 5.2 million tons in 2001 and 5.3 million tons in 2002. The self-sufficiency ratio of rice rose sharply to 102.7 percent in 2000 but is expected to drop to 101.8 percent in 2001 and 99 percent in 2002. Per-capita annual

rice consumption continued to decrease steadily, reaching 93.6 kilograms in 2000, compared to 96.9 kilograms in 1999 and 99.2 kilograms in 1998. The downward trend will continue in 2001 and in 2002, and is expected to reach 93.3 kilograms and 92.8 kilograms, respectively.

The decreasing trend of per-capita rice consumption has been compensated by the continuing rise in per-capita wheat and corn consumption. Wheat consumption has increased from 34.6 kilograms in 1998 to 35.5 kilograms in 1999. Corn consumption also expanded to 5.4 kilograms from 4.8 kilograms during the same period. Increased meat consumption also offset declines in rice consumption. Total meat consumption grew by 6.6 percent in 2000 and totaled 1.61 million tons. The trend of increasing meat consumption is likely to continue in the near future and is expected to increase to 1.64 million tons in 2001 and 1.71 million tons in 2002.

More specifically, beef consumption is expected to increase by 3.3 percent in 2001, and total 409,000 tons, with a per-capita consumption of 8.6 kilograms. It is expected to continue growing steadily, reaching 427,000 tons or 8.9 kilogram per person in 2002, largely due to increasing beef imports. Consumption of pork also increased in 2000, reaching 804,000 tons, and is projected to grow 815,000 tons in 2001 and 840,000 tons in 2002. Chicken consumption increased by 15.1 percent, to 326,000 tons in 2000. It is also expected to continue growing steadily, reaching 330,000 tons in 2001 and 350,000 tons in 2002. The demand for chicken in place of beef, presumably as a result of the outbreaks of FMD and BSE, is expected to continue in the foreseeable future.

The percentage of expenditure for food consumed outside the home continued to grow steadily, from 28.6 percent in 1994 to 36.3 percent in 1997 and to 39.4 percent in 2000. It is expected that the rate will exceed 40 percent in 2001. Monthly food expenditure per household in cities also increased continuously, from 342,000 Won in 1994 to 428,000 Won in 1997 and to 447,000 Won in 2000. As long as household income grows, monthly food expenditure is expected to continue to rise, even if its share of total income declines. The percentage of disposable income spent on all food is projected to decline, from 25.3 percent in 1997 to 23.4 percent in 2001 and to 23.1 percent in 2002.

Per-capita caloric intake rose to 2,928 calories a day in 1999 from 2,853 in 1990, with an annual rate of increase rate of 2.9 percent. It is expected to reach 2,945 calories in 2001 and 2,953 in 2002 if the rate of increase remains the same. About 15 percent of caloric intake comes from animal products, with the remaining 85 percent from vegetable products. The share of protein was relatively constant at around 13 percent of total energy. Fat, however, increased to 26 percent while carbohydrates declined to 61 percent.

Food Processing and Marketing

The food processing and marketing industry has been relatively inelastic in regard to the changes in the business cycle; thus, the

stock prices of most food processing companies were stable even during periods of large swings in the Korean comprehensive stock price index, from 1000 points to 400 points. Food and beverage production increased by 6.1 percent between 1995 and 2000. In contrast, total manufacturing production expanded by 54.7 percent, mainly because of the growth of more than 400 percent in the office, accounting, and computing machinery sector. Some sectors, such as clothing and textiles, recorded negative growth during the same period, however.

The food processing industry is characterized as a mixture of high technology and traditional technology. Demand for processed food tends to grow as consumer income increases. Most of Korea's popular television programs are sponsored by the food processing industry, whose advertisements usually have a direct effect on sales of processed food and on market share. Naturally, the top-selling company of processed food changes frequently, due to variations in expenditures on marketing and advertising as well as in the quality and price of the products.

Processed food with specific marketing niches is a growing sector in Korea as consumer tastes continue to change to western styles. New processed food products that have some health or beauty aspect are frequently introduced into the market and eventually succeed in gaining some market share. Another important issue is food safety. Consumers prefer processed food that has natural ingredients rather than artificial additives.

Prices of processed food tend to stay low or even decline because consumers are likely to switch brands frequently. Prices of food and beverages fell by 13.3 percent in 2000, compared to 1999. By contrast, producers' sales prices in the manufacturing sector as a whole declined by 7.3 percent, while prices of information and communications equipment increased by 58.7 percent in the same period. The recent reduction of prices for food and beverages is attributable to the drop in prices of raw materials in international markets. The future of processed food markets is expected to remain promising as long as the international prices of raw materials are stable. In addition, food companies should be able to raise productivity by introducing automated equipment and developing new products through investments in research and development.

Agricultural Production and Trade

Rice production increased by 3.3 percent to 5.3 million tons in 2000, up from 5.1 million tons in 1999. It is projected to stay constant at 5.3 million tons in 2001 and to drop slightly to 5.2 million tons in 2002. As rice production continues to remain stagnant and as imports under the Minimum Market Access (MMA) increases to 100,000 tons in 2000 from 75,000 tons in 1998, the self-sufficiency rate is expected to fall from 105 percent in 2000 to 101.8 percent in 2001 and to 99 percent in 2002. The decline in production is attributed to a reduction in the area under cultivation rather than a decline in yield. The area under rice cultivation is expected to

decrease by 30,000 hectares per year, from 1.06 million hectares in 2001 to 1.03 million in 2002. Rice yields are projected to decline to 4.94 tons per hectare in 2003.

Beef production dropped to 211,000 tons in 2000 from 227,000 in 1999. Beef production is expected to decrease rapidly in the next two years, to 156,000 tons in 2001 and 131,000 in 2002. Beef imports increased to 228,000 tons in 2000, up from 163,000 thousand in 1999, reflecting tariff rate quota (TRQ) increases and a rise in share of simultaneous buy and sell (SBS), with lowered tariff rates at 41.6 percent. It is expected that beef imports will continue to expand starting in 2001, after the limit in TRQ is abolished in January of 2001.

Pork production increased to 740,000 tons from 701,000 during the same period. Despite the outbreak of FMD and the resulting drop in pork exports, pork production increased to meet expanding consumption. Production is expected to shrink slightly, to 727,000 tons, in 2001 and then increase to 730,000 in 2002. Imports are expected to drop to 64,000 tons in 2001 but to increase again in 2002, rising to 111,000 tons. The prospects for pork exports remain poor, however. Although FMD did not recur in 2001, pork exports to Japan remain prohibited. Considering the fact that pork exports exceeded 80,000 tons in 1998 and 1999, domestic demand is expected to be met easily by domestic production in 2001 and in 2002.

Chicken production has also increased from 239,000 tons in 1999 to 266,000 in 2000. It is expected to decrease slightly, to 260,000 tons in 2001, and then rebound to 270,000 tons in 2002. Imports of chicken increased sharply, from 45,000 tons in 1999 to 66,200 in 2000, while export remained at only 1,000 tons in the same period. Net imports of chicken are projected at 70,000 tons in 2001 and 80,000 in 2002 as per-capita consumption increases. The demand for chicken has also increased as consumers have sought substitutes for pork and beef in the wake of the FMD outbreak.

Apple production remained constant at 489,000 tons in 2000 but is expected to decline slightly to 475,000 in 2001. Apple exports have decreased continuously since 1990, reaching 1,800 tons in 2000, and are expected to drop further. Grape production increased to a record 476,000 tons in 2000, up from 470,000 tons in 1999. Although the cultivated area of grapes fell slightly, growth in yield accounts for the increase in production. The same trend is expected to continue in 2002 after anticipated production decreases in 2001. Imports of grape are also projected to rise gradually in the near future.

The Role of Water Resource Management in the Food System

Korea is located in the Asian monsoon area, so precipitation is concentrated in the summer. Rainfall from June through September accounts for 64.5 percent of the total annual precipitation. Average annual inland precipitation during the period between 1959 and 1988 was 1,267 millimeters, which is 30 percent higher than the world average

of 970 millimeters. Per-capita precipitation, however, was about 3,000 m³, only 11 percent of the world average of 27,000 m³. According to United Nations data, per-capita available water resources were 1,650 m³ in 1995 but are expected to decline to 1,215 m³ in 2025; this is much lower than the United Nations' criterion of "water insufficient country," which is 1,700 m³ per capita.

Average annual runoff was 69.7 billion m³, 55 percent of total precipitation—in the same period. Runoff is also concentrated in summer season, accounting for 66.5 percent of average annual runoff. Flow fluctuation coefficients, which represent the difference between flow in flood and dry seasons, are more than 300 for most large rivers in Korea. By contrast, the coefficients of the Rhine River in Germany are only 14 and they are around 20 for some of the rivers in France. Including evaporation, efflux or total outflow of water amounts to 96.6 billion m³, 76 percent of total water resources. The remaining 24 percent of water resources, 30.1 billion m³, are utilized. Agriculture consumes 14.9 billion m³ each year, 50 percent of total utilized water. Of the remaining 50 percent of utilized water, 8 percent is used for industrial purposes, and human consumption and maintaining river flow account for 21 percent each.

Demand for rural water is projected at 17.9 billion m³ in 2011, of which 15.5 billion is destined for agricultural purposes. Although the area under cultivation is expected to reduce by 1.1 million hectares of paddy field and 750,000 hectares of uplands by 2011, the demand for water in agriculture is expected to exceed current utilization levels. Given these conditions, the Korean Agricultural and Rural Infrastructure Corporation (KARICO) has established the Comprehensive Project for Rural Water Utilization to develop and manage water resources over the long run. According to project estimates, the capacity for rural water supply will increase by 7.2 billion m³, of which 5.8 billion m³ can additionally be supplied to the agricultural sector in 2011. Detailed plans include methods for efficient use and management of water, such as centralized control and automatic management of irrigation. The principle of "payment by beneficiary" for irrigation water was introduced in January 2000 and is expected to raise the efficiency of water resource allocation in the agricultural sector. Prior to 2000, farmers paid for water through a membership fee to the Farmland Improvement Association (FIA), which supplied and managed irrigation water. As the FIA is consolidated into the KARI-

CO, the price of water is expected to rise, since it will reflect the costs of water production more precisely. The government still provides subsidies for irrigation water as it did before the recent changes, but the share of government support is projected to drop.

There are several methods for developing water facilities and expanding rural water supply: construction of multi-purpose dams, establishing large scale waterworks, or regional planning for rural water development from ground and underground sources. At the same time, there are many obstacles to expanding water supply: the enormous expense required to implement the plan (approximately 50 trillion Won or US\$40 billion for the Comprehensive Project above), the length of time needed (ten years for the Comprehensive Project), and objections from environmental institutions. Considering that the Korean water management system is dispersed among more than nine governmental departments, the government, establishing a centralized control organization might be the first step toward efficient water resource allocation.

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KOREA

	Units	1997	1998	1999	2000	2001 ^E	2002 ^F
FOOD CONSUMPTION PATTERNS							
Per capita caloric intake	Cal/day	2,956	2,819	2,928	2,936	2,946	2,953
From animal products	Cal/day	431	404	438	440	441	na
From vegetable products	Cal/day	2,525	2,415	2,490	2,496	2,505	na
Protein (% of calories)	%	13.1	13.3	13.3	13.4	13.4	na
Fat (% of calories)	%	24.3	23.3	25.8	26.0	26.0	na
Carbohydrates (% of calories)	%	62.6	63.4	60.9	60.6	60.6	na
INCOME AND FOOD PRICES							
Per capita income	US\$/capita	10,307	6,723	8,551	9,628	9,965	10,463
% of disposable income spent on food	%	25.3	23.9	24.0	23.7	23.4	23.1
% spent eating out	%	9.2	8.0	8.5	9.3	9.4	9.5
Food price index	1995=100	107.9	117.3	120.6	121.6	127.1	132.2
General price index (CPI)	1995=100	109.6	117.8	188.8	121.5	127.0	130.8
POPULATION							
Total population	Million	46.0	46.4	46.8	47.3	47.7	48.0
Urban	Million	40.9	41.0	42.0	43.8	44.3	44.9
Nonurban	Million	5.1	5.4	4.8	3.5	3.4	3.1
Share of population in the following age groups							
0-4 years	%	7.9	7.7	7.6	7.6	7.4	na
5-14 years	%	14.6	14.3	14.1	13.5	14.2	na
15-19 years	%	8.7	8.7	8.5	8.5	7.6	na
20-44 years	%	44.5	44.3	44.1	44.2	43.6	na
45-64 years	%	18.1	18.5	18.8	19.1	19.8	na
65-79 years	%	5.4	5.6	5.9	6.0	6.4	na
80-over years	%	0.9	0.9	1.0	1.0	1.1	na
Median age of population	Years	31.9	32.3	32.6	33	33.1	na
Female labor force participation	%	40.9	41.0	41.0	41.3	41.5	42.6
LIFE EXPECTANCY							
Males	Years	71.6	72.2	72.7	73.6	73.6	na
Females	Years	77.9	78.2	78.5	78.8	78.8	na
FOOD INFRASTRUCTURE							
Trade capacity							
Grain imports	1,000 Tons	13,731	13,141	13,947	15,288	15,288	na
Total food and agricultural exports	Million US\$	1,753	1,635	1,680	1,559	2,100	na
Perishable products	Million US\$	1,471	1,357	1,463	1,342	1,342	na
Fishery exports	Million US\$	1,493	1,364	1,364	1,501	1,501	na
Total food and agricultural imports	Million US\$	7,619	6,406	7,388	8,527	8,527	na
Perishable products	Million US\$	5,051	3,596	3,978	4,015	4,015	na
Fishery imports	Million US\$	1,045	1,015	1,015	1,400	1,400	na
Port capacity	1,000 Tons	313,948	329,392	345,595	359,959	359,959	na
Road access	Kms	87,621	93,238	99,216	105,587	105,587	na
Rail access	Kms	6,579	6,600	6,621	6,635	6,635	na
Telecommunications	1,000 Lines	23,795	25,346	26,998	28,078	28,078	na
Power generation	Million Kwh	224,444	215,300	215,300	220,204	220,204	na
Percent of population with refrigerators	%	100.0	100.0	100.0	100.0	100.0	100.0
ROLE OF AGRICULTURE AND TRADE IN THE ECONOMY							
Agriculture as a share of GDP	%	6.3	6.4	6.2	5.0	5.0	4.5
Self sufficiency in grains	%	30.4	31.4	29.4	30.0	30.0	30.0
MACROECONOMICS INDICATORS							
GDP growth	%	5.0	-6.7	10.9	8.8	3.5	5.0
Interest rate	%	13.4	15.0	8.9	8.5	8.0	8.0
Exchange rate	Won/US\$	1,415.20	1,207.80	1,145.40	1,260.00	1,300.00	1,300.00

na = not available E = estimate F = forecast

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