CHINESE TAIPEI

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Macroeconomic Situation and Outlook

Taiwan's economic growth has been sliding in recent years, hitting a record low of –2.1 percent in 2001. In 2002, the growth rate bounced back to 3.54 percent following the upward trend of the world economy. The recovery was led by the strong export sector, which expanded by 9.7 percent, while imports only increased by 6.2 percent . Investment shrank by 2.0 percent, and private consumption was weak, growing only at 1.91 percent . As a quarterly decomposition, the first quarter of 2002 continued the slumping trend from 2001, growing by only 1.2 percent , but the economy picked up strength in the remaining three quarters to achieve 4.0, 4.8, and 4.2 percent growth rates, respectively. The unemployment rate jumped from 3.0 percent in 2000 to 4.6 percent in 2001 and climbed higher still in 2002 to 5.2 percent . Prices remain stable as can be seen from the 0.2 percent contraction in the 2002 Consumer Price Index.

The U.S. and world economies are expected to grow moderately in 2003, which will in turn nurse a moderate export expansion in Taiwan. Big investment projects in the telecommunication industry and a high-speed railway project will continue, but private investment is expected to stall due to the weak financial sector and an excess supply of IT products. Taiwan's economy is projected to grow moderately at 3.4 percent in 2003. Private consumption will resume a normal growth path of 2.9 percent in 2003 to sustain the economic growth. Exports are expected to increase at 6.3 percent in 2003 but imports will grow faster at 7.17 percent .

The outbreak of Severe Acute Respiratory Syndrome (SARS) has hurt Chinese Taipei's economy and increased uncertainty for future economic prospects. If the government fails to contain the spread of SARS in the first half of the year, the downside risk of economic growth in 2003 could range from 0.5 percent to 1.5 percent . The Council for Economic Planning and Development estimated the outbreak of SARS is likely to slow GDP to 1.75 percent his year from the original 3.5 percent forecast. Every percent drop in GDP will generate one percentage point rise in unemployment. Therefore, the government of Chinese Taipei needs to speed up its promotion of the NT$70-billion public work projects and expansionary fiscal policy.

Food Prices and Consumption

Food prices are expected to be slightly lower in 2002 due to the cheaper imported food products after Taiwan's entry into the WTO. In 2002, food and beverage prices in Chinese Taipei decreased slightly (0.2 percent), while overall consumer prices dropped 0.2 percent. The entry into WTO did not cause too much downward pressure on food prices as expected in the first half of the year because many downsizing adjustments in production had taken place before entry. Production shortages from the previous year even caused food prices to go up. However, in the second half of the year, prices started to fall sharply as the impact from imports started to phase in. Prices for rice increased about 4.5percent. Meat prices increased only 0.2 percent after a 3-percent decrease the previous year. Prices for fresh seafood also decreased 0.4 percent while prices for processed seafood increased slightly by 0.6 percent. Prices for prepared food dropped slightly (0.5 percent), while prices for food –away –from home rose 0.2 percent in 2002. As the economy continued to suffer from a slow recovery, food and beverage prices decreased by 2.46 percent while the CPI decreased 0.74 percent during the first quarter of 2003.

Expenditures on food and beverages were about 25 percent of total municipal consumption in 2002. This is lower than in 2001 because both food prices and demand were weakened by the overall economic downturn. Daily per capita calorie intake has remained stable in recent years at approximately 2,877 cal per capita. Per capita consumption of rice has continued to decline from 65.9 kilograms in 1990 to 50.1 kilograms in 2001. Meanwhile, per capita consumption of meat increased from 62.9 to 76.6 kilograms. Per capita consumption of dairy products increased from 14.9 in 1990 to 22.6 kilograms in 2001. Per capita fruit consumption increased from 131.5 kilograms in 1990 to 134.4 kilograms in 2001. Per capita vegetable consumption also increased sharply from 93.3 kilograms in 1990 to 109.9 kilograms in 2001.

Food Processing and Marketing

The total value of food processing production in 2002 was NT$418 billion, a 2.9 percent decrease from 2001. More than half the product items experienced a recession, with the exception of cooking oil. The total export value of processed food decreased slightly by 2.2 percent. Cooking oil production increased more than 17 percent. However, total sales of frozen food went down 1.1 percent because of the recession and competition from Southeast Asian and Chinese manufacturers. The feed industry continued to suffer a 5.2-percent decline from the previous year because of shrinking demand from the swine and poultry industries. Taiwan Sugar Corp., the state-run sugar processor, plans to shut down four of its seven sugar mills and reduce production by half by 2005. The company will be privatized and consolidate its operations into biotechnology, food processing, and land management, as well as a retail and distribution business.

The entry into WTO has both positive and negative impacts on food manufacturers. The positive impact comes from the reduction in raw material costs as a result of low import tariffs. However, the competition from foreign products also has a negative influence on domestic sales. Therefore, many food manufacturers have diverted their operations into import business to supplement their domestic production. Some companies turn to strategic alliances with health food and software games companies to promote their products in the health food and youth markets. Some companies are optimistic about the economic recovery and have converted their abundant land into logistic centers, bio-technology parks, recreational theme parks, or large shop-

ping complexes. The Uni-President branched out its food processing operations to mainland China with about 40 factories employing more than 20,000 workers currently. The company predicts the revenues will increase by 60-fold in the next 20 years.

Agricultural Production and Trade

Crop production conditions in 2002 were rather favorable except for an early drought in the northern region during the spring planting season. The abundant sunshine caused a bumper crop of rice and vegetables in the latter part of the year. The importation of foreign rice has forced the government to enlarge its set-aside program. However, rice production in 2002 increased 4 percent. Vegetable production increased 7.0 percent because there was no typhoon. Fruit production declined 7 percent mainly from acreage reduction. Floral crops were negatively affected by the economic downturn and weakened export market. Therefore, the overall growth in the crop sector is negative.

Hog production regained its momentum 5 years after the foot-and-mouth disease (FMD) outbreak. Production increased 6.4 percent in 2002, and the average operation size was enlarged. The phasing-out of inefficient farms has also helped this sector to cope with imports. Poultry production increased 2.6 percent and lamb production increased 15 percent, while milk production declined by 2.5 percent. In general, there was no significant negative impact from WTO entry as both production and prices remained stable.

The total value of fishery production increased 3.1 percent in 2002. The harvest in the far-sea fishery increased 2.0 percent, and the production of inland aquaculture increased 12.6 percent, a big recovery from the previous year. Marine culture also showed an increase of 8.0 percent.

Agricultural and food imports increased 3.3 percent in 2002. The import values of fruits and meat products increased 9.8 and 6.3 percent, respectively. Cereals and oilseed imports increased 4.3 and 7.0 percent, respectively. On the other hand, dairy and seafood imports decreased by 2.6 and 0.4 percent. During the first quarter of 2003, the import value increased 18.4 percent from last year. The forecast is not as optimistic for the remaining quarters as the economy continues to suffer from a drop in consumption and commercial activities due to the 2003 outbreak of SARS.

The total value of agricultural and food exports increased 3.9 percent in 2002. Seafood is the major export item. The value of exports in 2002 increased 7.27 percent. Meat exports increased 72.2 percent. The export value of oilseed and dairy also increased by 62.63 and 14.88 percent, respectively, while cereals, vegetables, and fruit exports declined 3.92, 10.0, and 16.5, respectively. During the first quarter of 2003, seafood exports increased 13.6 percent in value, while the exports of meat and crops also increased 8.6 and 13.3 percent, respectively. Export prospects are expected to be better in the near future as the global economy recovers.

Food and Agricultural Policies

Current agricultural policies are focused on reforming the agricultural financial system and monitoring the impact of imports on domestic agricultural markets. According to the statistics released by the Directorate General of Budget Accounting and Statistics (DGBAS), the non-performing loan ratio of all farmers'/fishermen's credit unions rose from 8.2 percent to 17.9 percent during the period of 1996-2000. The market shares of the credit unions in retail loan markets and deposits also declined significantly during the same period. Several factors have contributed to the declining trend, for example, the occurrence of bank runs over the last few years and the keen competition brought by new commercial banks.

The Ministry of Finance (MOF) previously oversaw the performance of the agricultural credit unions—the major rural financial system in Chinese Taipei. In the wake of the alarming performances, the MOF drafted a reform plan to restructure the ailing grassroots financial institutions by merging them into commercial banks after the promulgation of the Financial Institution Merger Law on December 13, 2000. On September 2001, the MOF officially forced the takeover of 35 poorly performing credit unions by 10 commercial banks. However, after a demonstration against the reform by 120,000 angry farmers and fishermen in November 23, 2002, the government reassigned management of the agricultural sector's financial system to the Council of Agriculture. The legislature is currently reviewing the Agricultural Financial Law, which stipulates that bankrupt credit unions can only be taken over by other credit unions rather than commercial banks. A new financial institution will be created to oversee financial affairs, including the 300 credit unions and a newly proposed national agricultural bank if the legislature passes the law.

One year after WTO entry, the prices of more than 200 vegetables and fruits fell by 20-50 percent, further straining farmers' finances. The government announced that a budget of NT$150 billion will be allocated within 12 years to fund agricultural development along with NT$100 billion within 3 years to compensate for losses due to agricultural importation changes required by agreements to join the WTO. Agro-tourism is heavily promoted as a major scheme to raise farmers' earnings. The production of rice along with many TRQ items, for example, azuki beans, dry mushroom, garlic, pork, and milk, are expected to be reduced with compensation. Currently, there are 340,000 rice farmers cultivating 320,000 hectares of rice fields each year. The government is planning to shrink rice farming by 50,000 hectares over the next 5 years. Food aid would also help trim surplus stockpiles and maintain local rice prices at reasonable levels as the island's entry into the WTO last year opened the floodgates to foreign rice. The government is also planning to focus on strengthening marketing of the nation's farm products overseas and on eliminating non-trade barriers such as quarantine restrictions with foreign countries.

Table 1. Per Capita Annual Expenditure and Related Economic Variables, Chinese Taipei

Year	Per capita GDP (N.T.$)	Per capita Consumption Expenditure (N.T.$)	Per capita Food Expenditure (N.T.$)	Average Propensity to Consume (%)	Engel's Coefficient (%)	Consumer Price Index for Food (2001=100)	Annual Per Capita Food Availability (kg)	Per Capita Daily Nutrient Availability (Kcal)
1970	14,417	8,763	4,189	60.78	47.80	18.71	427.9	2,662
1975	33,811	21,052	7,837	62.26	37.23	38.49	466.07	2,772
1980	77,575	43,518	14,982	56.10	34.43	55.29	505.55	2,850
1985	119,272	65,927	20,449	55.27	31.02	65.06	515.1	2,874
1990	199,340	116,593	28,570	58.49	24.50	74.98	546.07	3,019
1995	308,086	194,426	38,256	63.11	19.68	94.04	590.33	3,058
2000	403,382	270,339	44,314	67.02	16.39	100.00	610.06	3,022

Sources: Compiled from Statistical Abstract, *Statistics of National Income, Report on the Survey of Family Income and Expenditure*, and *Food Balance Sheets*.

The Role of Demographics in the Food System

CHANGES IN FOOD DEMAND

The structure and patterns of food consumption in Chinese Taipei has changed significantly during the last three decades. The demographic and socioeconomic characteristics that may affect food consumption have also changed markedly in recent years. As a result, safety, convenience, diversity, and healthfulness have become the four most important components in food purchasing behavior for residents in Chinese Taipei.

As shown in Table 1, per capita disposable income has risen from NT$14,417 to NT$403,382, which is about 28-fold over the 30-year period, an approximately 11.7 percent growth rate per annum. Meanwhile, per capita consumption expenditure has increased more than 30 times. The average propensity to consume (the proportion of consumption expenditure to disposable income) stabilized at around 55 percent during the 1970-1990 period and then increased to 67 percent in 2000. Food consumption increased about 10 times, which is much slower than the increase in total consumption. As a result, the Engel's coefficient (the ratio of food consumption to total consumption expenditure) declined markedly—from 48 percent in 1970 to 16 percent in 2000.

The annual quantity of food availability has increased from 428 Kg in 1970 to 610 KG in 2001, representing a 42-percent increase during the past three decades. At the same time, the price of food has increased 434 percent over the past three decades, when measured by the CPI for food. Therefore, higher food prices accounted for a large part of the increase in food expenditure. The more rapid increase in expenditure relative to food quantities consumed, coupled with the rise in the CPI for food, suggests that consumers have substituted more expensive foods for cheaper alternatives. However, per capita daily nutrient availability increased only slightly, from 2,662 Kcal to 3,022 Kcal (approximately 14 percent), during the period. This trend also indicates that people pay more attention to quality than quantity in their diets.

Table 2 shows that people are spending more for food away from home. Per capita annual expenditure for food at home increased from

Table 2. Per Capita Expenditures on Food at Home and Food Away from Home, Chinese Taipei, in Current Prices

	Total Expenditure	Food at Home		Food Away from Home	
		Expenditure	%	Expenditure	%
1986	19,121	16,994	88.88	2,127	11.12
1991	27,104	22,250	82.09	4,854	17.91
1996	37,927	28,590	75.38	9,337	24.62
2000	41,248	29,276	70.98	11,972	29.02

Source: Lee (2002).

Table 3. Per Capita Annual Expenditure on Food at Home and Away from Home by Region, Occupation, and Urbanization, Chinese Taipei, 2000

Variables	Food Expenditure		Food at Home (2000)		Food Away from Home (2000)			
	1990	2000			Special occasions		Board	
	NT$	NT$	NT$	%	NT$	%	NT$	%
REGION								
North	26,519	41,669	27,995	67.18	1,335	3.20	12,339	29.61
Central	22,732	35,661	24,944	69.95	1,159	3.25	9,558	26.80
South	25,453	38,677	27,896	72.12	975	2.52	9,806	25.35
East	22,686	33,481	22,529	67.29	1,293	3.86	9,659	59.85
OCCUPATION								
White collar	26,874	45,295	30,112	66.48	1,070	2.36	14,113	31.16
Blue collar	23,984	38,680	26,488	68.48	925	2.39	11,266	29.13
Agri. sector	21,408	32,201	24,577	76.33	1,202	3.73	6,421	19.94
URBANIZATION								
City	27,403	45,231	30,506	67.44	1,000	2.21	13,725	30.34
Town	23,763	36,097	24,829	68.78	1,085	3.01	10,182	28.21
Rural	21,863	34,100	25,410	74.52	1,081	3.17	7,610	22.32

Data Sources: *Survey of Family Income and Expenditure, Taiwan Area, R.O.C.*
(i) White collar including legislators, government administrators, business executives and managers, professionals, technicians and associate professionals, clerks, service workers and shop and market sales workers.
(ii) Blue collar including craft and related trades workers, plant and machine operators and assemblers, elementary occupations.
(iii)Agriculture sector workers including agriculturist, animal husbandmen, hunter, forester, and fishermen.

Table 4. Demographic and Socioeconomic Factors, Chinese Taipei,

	1970	1975	1980	1985	1990	1995	2000
POPULATION (1000)	14,676	16,150	17,805	19,258	20,353	21,357	22,277
Number of births (1000)	304	368	413	345	335	330	305
Birth rate (%)	3.72	2.3	2.34	1.8	1.66	1.55	1.38
Death rate (%)	0.49	0.47	0.48	0.48	0.52	0.56	0.57
Annual growth rate (%)	2.4	1.9	1.9	1.3	1.2	0.99	0.81
Ratio of male population	52.7	52.4	52.2	51.9	51.7	51.5	51.7
Ratio of rural population	40.9	34.7	29.7	21.5	20.9	18.4	16.5
LIFE EXPECTANCY							
Male	66.66	68.27	69.56	70.82	71.33	71.9	72.6
Female	71.56	73.42	75.54	75.81	76.75	77.8	78.5
PERCENT OF POPULATION							
Under age 18	39.6	35.3	32.1	29.6	27.1	23.8	21.1
Over 65 years of age	3	3.5	4.3	5.1	6.2	7.6	8.6
MARRIAGE							
Number (1,000)	108.72	151.44	174.72	153.57	142.75	160.25	181.64
Rate (%)	7.5	9.46	9.91	8.03	7.06	7.53	8.19
MEDIAN AGE OF 1ST MARRIAGE							
Male	—	27	27.6	28.3	29.1	29.2	
Female	—	23.4	24.4	25.7	26.6	25.7	
DIVORCE							
Number (1,000)	5.38	7.57	13.47	21.16	27.45	33.36	52.67
Rate (%)	0.37	0.47	0.76	1.11	1.36	1.57	2.37
No. of Households (1,000)	2,636	3,081	3,744	4,361	5,093	5,819	6,682
Single household (1,000)	—	—	450	556	736	—	497
Avg. household size	5.4	5.2	4.8	4.4	4	3.67	3.33
LABOR FORCE PARTICIPATION							
Total (%)	57.4	58.2	58.3	59.5	59.2	58.7	57.7
Male (%)	78.9	77.6	77.1	75.5	74	72	69.4
Female (%)	35.5	38.6	39.3	43.5	44.5	45.3	46.2
PERCENT OF HOMES WITH							
Refrigerator	—	—	92.3	98.8	101.4	—	—
Electric cooker	—	—	95.0	102.2	107.3	—	—
Gas burner	—	—	96.8	99.7	100.7	—	—
Microwave oven	—	—	—	5.3	20.3	—	48.1

NT$16,994 in 1986 to NT$29,276 in 2000, representing an annual growth rate of 4.0 percent. On the other hand, spending on food away from home increased from NT$2,127 in 1986 to NT $11,972 In 2000, representing an annual growth rate of 13 percent. The proportion of food-away-from-home purchases in total food expenditure increased from 10 percent to almost 30 percent during this period. This trend can be attributed to changes in demographics, including female labor force participation, age distribution, and lifestyles.

Table 3 shows that the practice of eating away from home is sensitive to the occupation of the household head and location. People living in the southern region or rural areas and agricultural sector workers have low expenditures for food away from home. Income is another important factor for eating out. The 1990 survey data shows that spending on eating out among the highest income group is about twice as much as among the lowest income group.

According to the statistics for the period between 1992 and 1997 by the Department of Health, assimilated fat constituted 34 percent of the total ingested calories per person. This is higher than the recommended standard of 30 percent, indicating that consumers in Chinese Taipei ingest too much fat from food. Heart disease, diabetes, kidney disease, hypertension, and strokes are among the top 10 causes of death in Chinese Taipei, and many of them are caused by a diet high in fat.

IMPACT OF DEMOGRAPHIC CHANGES ON FOOD DEMAND

The demand for food has been affected by changing demographics, such as household composition and the aging of the population. The trends of these major demographic factors are illustrated in Table 4.

Population Growth

The food market expands in proportion to the rate of population growth. The annual population growth rate has shown a declining trend since 1970's 2.4 percent rate down to 1.2 percent in 1990. The growth rate was less than 1 percent in 1995 and declined to 0.8 percent in 2000. The birth rate was as high as 3.7 percent in the 1970s, and then steadily declined to 1.4 percent in 2000. Life expectancy has increased more for women than for men due to a higher survival rate for women. As a result of the fall in population growth and change in composition, food demand will not grow as rapidly as it has in the past.

Age Distribution

Figure 1 shows that the population distribution by age has changed over time. People over age 65 represented 3-4 percent of the population during the 1970s, but had risen to 9 percent in 2001. The over-65 age group is projected to exceed 10 percent by 2011 and rise to 22 percent by 2031. The median age group (ages 15 to 64) g represented 60 percent in the 1970s and had gradually moved to 70 percent by 2001. This growth will be followed by a downward trend and decline to 63 percent by 2031. The aging trend implies increased nutritional concerns and higher demand for ready-prepared meals.

Urbanization

In 1970, about 40 percent of the population lived in rural areas as compared with 20 percent in 1990. The proportion of the rural population has continued to decline, dropping to 16.5 percent by 2000. This regional movement has resulted in more investments in food marketing services. The food consumption survey reveals that consumers living in the urban areas eat relatively more meat, fish, fruits and fresh milk, but less fat, vegetables, and sugar than consumers in the rural areas.

Household Size

The number of households rose from 2,636 to 5,093 thousand between 1970 and 1990, representing an annual growth of 3.3 percent. Between 1990 and 2000, the annual growth rate decreased to 2.8 percent. At the same time, the average number of people per household has also shown a downward trend, dropping from 5.4 persons per household in 1970 to 3.3 persons in 2000. Factors contributing to the decreasing household size include a lower birth rate,

increased divorce, longer life expectancy, later marriage, and increased incomes that allowing both older and younger members to maintain households of their own. Smaller households tend to increase their per capita food expenditures because there are no economies of scales in purchasing and preparing their meals. In addition, smaller households tend to spend more on food away from home, take-out, conveniently prepared, and food in smaller packages.

Marital Status

The number of marriages in 1970 was 108 thousand, rising to a record high of 175 thousand by 1980 and then decreasing to 142 thousand by 1990. In the 1990s, the marriages rate increased sharply, reaching a second peak of 182 thousand in 2000. There was also a rapid rise in the divorce rate during the 1990s. Those who get married at later ages and those of single parent households are likely to work outside their home, purchase more convenient foods, and dine out more often due to time constraints.

Labor Force Participation

Women have much higher rates of employment outside the family than in past eras. The labor force participation rate of women was 35.5 percent in 1970, increasing to 46.2 by 2000. On the other hand, the proportion of men in the labor force decreased from 78.9 percent to 69.4 during this period. This trend has many implications for food consumption. Families with two wage-earners have higher spending power. Married working women tend to buy more time-saving appliances, consume more convenient food, and spend less time shopping but purchase more food away from home or take-out.

Household Appliances

Due to decreased culinary skills and limited non-working time, prepared foods are becoming popular in households with two earners. As a result, the use of time-saving appliances such as microwave ovens have been widely adopted by smaller households to prepare meals. The survey data shows that almost all households have at least one refrigerator, one electric cooker, and a gas burner. About 48 percent of households now own a microwave oven. This suggests that smaller households with time-saving kitchen appliances may buy more prepared foods and cook and eat at home rather than dining out.

IMPACT OF DEMOGRAPHIC FACTORS ON FOOD SUPPLY

In the rural areas, there has been a great change in socioeconomic structure over the past three decades. Because of low agricultural incomes, the young generations flow to thecities for jobs. Therefore, the aging phenomenon is more serious in rural areas than that of cities. The government initiated a number of policies, such as a special low-interest credit program starting in 1984 to subsidize young beginning farmers and some other training programs, to deal with the aging problem among the rural population. The subsidized credit program is quite successful if it is evaluated from the individual (or micro) basis. But from the aggregate (or macro) level, it seems that farm emigration continues despite this government effort.

According to the 1990 *Agricultural Census*, the population of people 65 and above in agricultural households was 10 percent. In the 2000 census, it had already reached 20 percent. In rural areas, there are also increasing numbers of households with a single aged person as well as households that only consist of the elderly and children without young and middle-aged adults.

As to the status of farming, the problem becomes more serious in the more remote areas where emigration of young generations accelerates the aging phenomenon. In some counties, two-thirds of the members of the production/marketing co-op teams are 65 years and above. The percentage of farm managers aged 65 and above doubled in the past decade, increasing from 17 percent in 1990 to 35 percent in 2000. The average age of these managers reached 58.6 in 2000, with males representing more than 80 percent and 70 percent having received only elementary education.

The problems of aging rural communities include poor agricultural management and technology, declining economic strength, health problems, and the needs related to economic support and living arrangements. Therefore, the government's efforts have been aimed at helping the elderly stay at home and mobilizing community resources to take care of the elderly at home, including meal services, day care centers, home care services, hot lines, and so on. In 1987, the Council of Agriculture carried out a pilot study to assess the status of family farms. Among the 2,012 sample farms, 85 percent of people aged 65 and above (the elderly) were living with their children, who also provided living expenses. Less than half of the elderly in the sample had had physical check-ups. More than 80 percent reported that their children were the best candidates to take care of them. Less than 1 percent of the elderly were interested in staying in a nursing home or other institutions when it is necessary. However, one-third of sampled families had expressed difficulties in taking care of the elderly.

Starting from 1988, the COA started to establish strategies to improve the livelihoods of the rural elderly through home economic extension systems. In fiscal 1991, 10 district fishery associations were funded and supervised to implement the Livelihood Improvement Program for the Rural Elderly. The target population of this program was people aged 65 and above. The program was very successful, and thus, it has been continued and expanded until now.

To cope with the aging problem and low quality of human resources in the farming sector, the Agricultural Development Ordinance was modified in 2001. The revisions were made to encourage farmers to enlarge their operations with better management, to guide older farmers to retire, and to reinforce education and training for rural youths to get involved with agricultural production. Several strategies have been proposed by extension professionals, including the establishment of an institute for agricultural education and training and a certification and licensing system for farmers with specialized managerial skills and for extension specialists.

On the other hand, a movement toward entrepreneurship in rural

communities has emerged in recent years as farmers are facing a consumer-oriented development. Large superstores such as Carrefour are growing in popularity. Facing a virtually monotone type of buyer, the farmers have to be more organized to gain better bargaining power. The trend for integration is more visible for fruit and vegetable products. The government often provides subsidies to promote production and marketing teams so aging rural communities can improve their competitiveness. Poultry and swine production is usually more capital-intensive, and producers are more active in enlarging their operational scale than engaging in integration.

PUBLIC POLICIES ON FOOD SYSTEM

Taiwan entered into the World Trade Organization (WTO) in 2002. Changes in both industrial structure and employment structure are inevitable. A study by Hsu et al. (2001) has found that due to fast expansion in the services sector, female employment opportunities will increase dramatically at an annual rate of 1.2% during 2002-2006. In contrast, male employment is projected to increase at an annual rate of only 0.5% during the same period. For aging people, the government needs to accelerate its legislation of the pension program or social security system for their retirement. For younger people seeking employment opportunities, job training programs should be carried out to help them transfer to the service sectors. In the agricultural sector, training programs should be carried out to assist farmers to transfer from production to agri-tourism (that is, service activities on their farms).

The Executive Yuan will appropriate NT$80 million per year in funds to educate farmers as part of a 5-year, NT$400-million project. It is expected that at least 1,500 people in the farming sector will take part in computer training under the project, and that by 2007 15 regional teaching centers on farming will be set up. The project, submitted by the Council of Agriculture, aims not only to establish regional agricultural teaching centers for lifelong education and training, but also to set up a management counseling service system as well as a promotion-specialists system. The Executive Yuan said that 1 year after Taiwan's entry

Changes in the age distribution for the total population:

Unit: 1,000 persons, %

	total	0~4	5~14	15~19	20~44	45~64	65~79	80 over
1999	22,092	1,507	3,227	1,940	9,411	4,140	1,583	281
2000	22,276	1,489	3,213	1,875	9,449	4,327	1,619	301
2001	22,405	1,426	3,235	1,768	9,482	4,519	1,646	327
2002	22,520	1,350	3,248	1,681	9,518	4,691	1,678	352
2003	22,618	4,537			16,010	2,072		
2004	22,746	4,488			16,128		2,130	
2010	23,448	4,107			16,915		2,426	
2020	24,253	3,767			16,816		3671	
Percentage distribution								
1999	100.00%	6.82%	14.61%	8.78%	42.60%	18.74%	7.17%	1.28%
2000	100.00%	6.69%	14.43%	8.42%	42.42%	19.42%	7.27%	1.35%
2001	100.00%	6.37%	14.44%	7.89%	42.32%	20.17%	7.35%	1.46%
2002	100.00%	6.00%	14.42%	7.46%	42.26%	20.83%	7.45%	1.57%
2003	100.00%	20.06%			70.78%		9.16%	
2004	100.00%	19.73%			70.90%		9.36%	
2010	100.00%	17.72%			72.14%		10.34%	
2020	100.00%	15.53%			69.33%		15.14%	

Changes in the age distribution for the farm population:

unit: person,%

	2000		1990		Percentage change
	number	%	number	%	(%)
Total	3,688,885	100.00%	4,309,787	100.00%	-14.41
0~15	760,523	20.62%	1,047,437	24.30%	-27.39
15~24	467,848	12.68%	761,388	17.67%	-38.55
25~44	1,042,267	28.25%	1,262,001	29.28%	-17.41
45~64	844,399	22.89%	898,720	20.85%	-6.04
65~69	217,417	5.89%	139,551	3.24%	55.8
70~	356,431	9.66%	200,690	4.66%	77.6

Source: 2000 Agricultural Census.
Note: The numbers in this table exclude household members in the fishery sector.

3. Sources of annual changes in total population:

unit: 1,000 persons

	Total	Growth rate (%)	Birth	Deaths	Net immigration
1999	163	0.75	283	126	6
2000	184	0.83	304	126	6
2001	124	0.56	260	127	-9
2002	133	0.60	263	130	0
2003	131	0.59	264	133	0
2004	129	0.57	264	135	0
2010	105	0.45	258	153	0
2020	64	0.26	243	179	0

4. Population numbers by sex:

unit: 1,000 persons,%

	Number of population			Percentage composition	
	Total	Male	Female	Male	Female
1999	22,034	11,282	10,752	51.20%	48.80%
2000	22,216	11,360	10,856	51.13%	48.87%
2001	22,339	11,407	10,933	51.06%	48.94%
2002	22,486	11,469	11,018	51.01%	49.00%
2003	22,618	11,523	11,095	50.95%	49.05%
2004	22,746	11,575	11,172	50.89%	49.12%
2010	23,448	11,848	11,600	50.53%	49.47%
2020	24,253	12,120	12,134	49.97%	50.03%

5. Life expectancy

unit: age

	Male	Female
1999	72.48	78.19
2000	72.62	78.45
2001	72.86	78.74
2002	73.10	79.04
2003	73.34	79.33
2004	73.58	79.63
2010	75.01	81.39
2020	77.40	84.33

6. Changes in population density:

	Population (1,000 persons)	Total land (1,000 ha)	Arable land (1,000 ha)	Population density (person/ha)	
				by total land	by arable land
1999	22,034	3,602	855	6.12	25.77
2000	22,216	3,602	851	6.17	26.11
2001	22,339	3,602	849	6.20	26.31
2002	22,486	3,602	836	6.24	26.90
2003	22,618	3,602	824	6.28	27.45
2004	22,746	3,602	812	6.31	28.01
2010	23,448	3,602	762	6.51	30.77
2020	24,253	3,602	650	6.73	37.31

into the WTO, the nation's agricultural sector has changed, and the impact of high technology on agricultural management, agricultural construction, and farmers' welfare has also risen. It is hoped that the program will foster a more competitive agricultural sector

Another policy change that may affect food purchasing patterns is the ban on using disposable plastic bags and eating utensils. At present, residents in Chinese Taipei consume more and more processed products with more intensive packaging as lifestyles change along with the increases in individual households, retired people, and career women. For many years, environmental policies have focused mainly on pollution control on the production side or manufacturing process. Now the government wishes to focus more on the households' sustainable consumption, which will affect not only consumption behavior and the price structure for consumable goods, but also the handling and transport network. Therefore, it is necessary to give some attention to how the food system will accommodate this new policy direction.

DEMOGRAPHIC DATA PROFILE

For Chinese Taipei, the aging of the population is expected to be very rapid, according to the projection of the Council for Economic Planning and Development. The proportion of the population aged 65 and above would reach 14 percent by 2019, and 20.1 percent by the year 2027, that is, one out of five people will be elderly.

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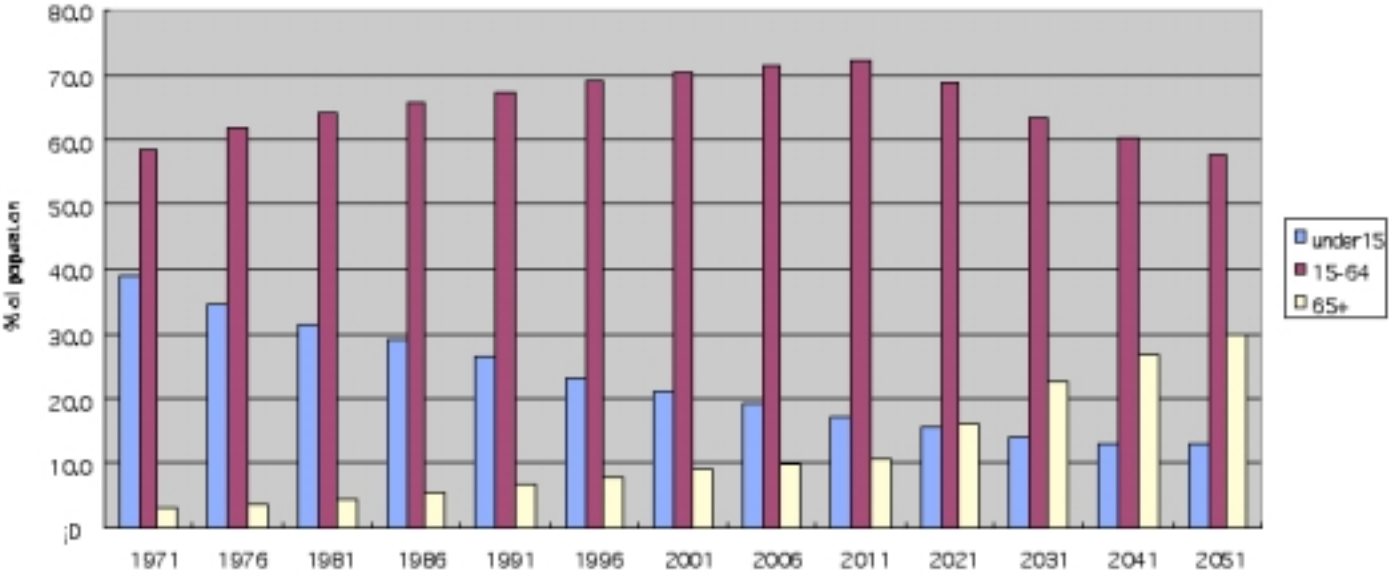
Figure 1. Age Distribution of Population, Chinese Taipei, 1971~2051



CHINESE TAIPEI

	Units	1999	2000	2001	2002	2003E	2004E
FOOD CONSUMPTION PATTERN *a*							
Per capita caloric intake	(Cal/day)	2974	2948	2805	2910	2925	na
From animal products	(Cal/day)	879	1213	1155	1135	1140	na
From vegetable products	(Cal/day)	2095	1735	1650	1775	1785	na
Protein	(% of calories)	13.20	13.10	13.20	13.20	13.30	na
Fat	(% of calories)	38.50	37.80	37.60	37.50	37.40	na
Carbohydrates	(% of calories)	48.40	49.10	49.20	49.30	49.30	na
INCOME AND FOOD PRICES							
Per capita income	(US$/capita) *b*	12101	12916	11637	11633	11787	na
% disposable income, food		18.50	18.46	18.30	18.50	18.65	na
% disp. Income, food away from home		5.10	5.30	5.20	5.30	5.10	na
Food price index (Index 2001=100) *c*		100.52	100.93	100	99.80	99.00	99.50
General price index (CPI) (Index 2001=100) *c*		98.77	100.01	100	99.80	99.94	100.63
POPULATION *d*							
Total population	(Million)	22.0	22.2	22.4	22.5	22.5	na
Urban	(Million)	16.5	15.5	16.5	15.5	15.5	na
Non urban	(Million)	5.6	6.7	5.8	6.9	7.0	na
Share of population in each age group:							
0-4 years	(Percent)	6.82	6.99	7.16	6.00	5.94	na
5-14 years	(Percent)	14.61	15.19	15.79	14.42	14.37	na
15-19 years	(Percent)	8.78	8.80	8.82	7.46	7.38	na
20-44 years	(Percent)	42.60	44.37	46.21	42.26	42.21	na
45-64 years	(Percent)	18.74	15.62	13.02	20.83	21.00	na
65-79 years	(Percent)	7.17	7.61	8.08	7.46	7.49	na
80 and over	(Percent)	1.28	1.42	1.58	1.56	1.58	na
Median age of population	(Years)	32.0	32.1	32.2	32.6	33.1	na
Female labor force participation	(Percent)	46.0	46.0	46.1	46.6	46.8	na
LIFE EXPECTANCY AT BIRTH *d*							
Males	(Years)	72.2	72.6	72.4	73.04	76.50	na
Females	(Years)	78.1	78.3	78.3	78.81	79.10	na
FOOD INFRASTRUCTURE							
TRADE CAPACITY *e*							
Grain exports	(1,000 Tons)	155	166	203	142	140	na
Grain imports	(1,000 Tons)	6274	6469	6616	6694	6500	na
TOTAL FOOD AND AGRICULTURAL TRADE	(MILLION US$) *e*						
Total food and ag. exports	(Million US$)	3102	3278	3031	3148	na	na
Perishable products exports	(Million US$)	236	224	196	171	na	na
Fishery exports	(Million US$)	1023	1211	1143	1226	na	na
Total food and ag. imports	(Million US$)	7629	7591	6850	7079	na	na
Perishable products imports	(Million US$)	570	564	506	545	na	na
Fishery imports	(Million US$)	594	595	502	501	na	na
Port capacity	(Incoming and outgoing vessels, 1000 tons) *f*	1014420	1051403	998833	1095894	na	na
Road access	(Kms) *f*	20319	20375	20654	22998	23120	na
Rail access	(Kms) *f*	2065	1887	1851	1836	1830	na
Telecommunications	(1,000 subscribers) *f*	12040	12642	12858	13099	13110	na
Power generation	(Gwh) *g*	153027	171950	163353	168254	170000	na
Percent of population w/refrigerators	(Percent) *h*	99.35	99.45	99.45	99.56	100.00	100.00
Post harvest losses	(percent of production) *a*	5.43	5.65	5.40	5.30	5.30	5.20
FOREIGN INVESTMENT IN THE FOOD SECTOR *i*							
Inward FDI in the food sector, total	(Million US$)	18	49	75	52	na	na
From other PECC economies	(Million US$)	13	17	12	13	na	na
Outward FDI in the food sector, total	(Million US$)	59	50	61	186	na	na
To other PECC economies	(Million US$)	43	38	60	168	na	na
ROLE OF AGRICULTURE AND TRADE IN THE ECONOMY *b*							
Agriculture as share of GNP	(Percent)	2.56	2.09	1.95	1.86	1.78	1.75
Self sufficiency in grains	(%, energy base)	29.8	28.7	26.4	25.0	24.0	23.0
Self sufficiency in horticultural products	(%, energy base)	91.5	90.2	90.8	89.5	89.0	88.5
POLICY TRANSFERS							
Consumer subsidy equivalents	(Percent)	na	na	na	na	na	na
Total transfers (subsidy/tax)		na	na	na	na	na	na
Total transfers per capita		na	na	na	na	na	na
MACROECONOMIC DATA							
GDP growth	(%) *i*	3.93	4.02	-2.18	3.54	3.37	4.13
Interest rate	(%) *j*	5.12	4.62	3.00	2.03	2.00	2.00
Exchange rate currency/US$ (k)		32.27	31.23	33.81	34.76	34.24	33.30

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(e) = estimates Na = not available.
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i. Directorate-General of Budget, Accounting, and Statistics, Monthly Statistics