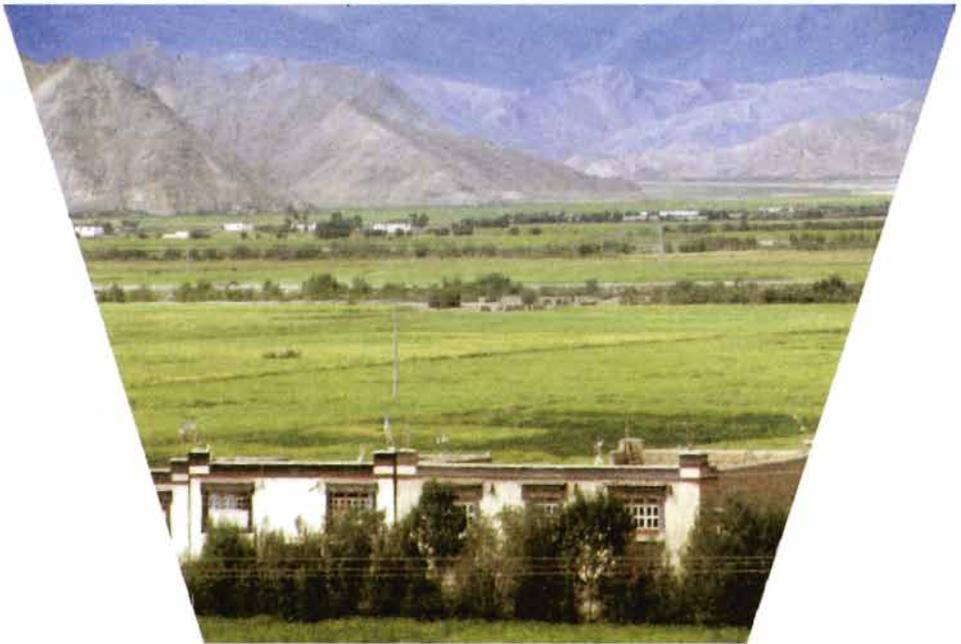


Seven

changing food preferences & demands

- Background: Barley crops moving higher – perhaps global warming is facilitating expansion of farmlands in Tibet
- *Tej Partap*
- Top Inset: Harnessing water for farming major efforts have been made in the valleys to provide irrigation facilities to facilitate food production
- *Tej Partap*
- Bottom inset: Maturing wheat grains ready for harvest in central Tibet- the food bowl
- *Tej Partap*



Wheat crop in central Tibet- known as the food bowl of Tibet - Tej Partap

Changing Food Preferences and Demands

Two factors have the most effect on increases in food consumption and food demand. One is the population increase; when the levels of food consumption and food preferences are stable, a larger population will increase the demand for food. The other factor is income growth, which influences changes in food preferences, lifestyles, and patterns of food consumption. The higher the income, the greater the intake of calories and protein tends to be. Thus, population size and income growth are major factors affecting food consumption and food demand.

Population Growth

The total population in 1997 was 2,427,000, of which 417,000 lived in urban and 2 million in rural areas. The urban population increased suddenly in 1987 and 1989 due to an administrative shift that re-classified some of the population living in or near towns and cities from rural to urban. The urban - rural balance also changed significantly relative to the total population. Overall, Tibet has kept a growth rate of more than 1.5% per annum. In recent years, however, this rate has tended to decrease. The rate of total population growth during 1996/1997 was 1.4%, down from the 1.6% during 1991-1992. The growth rates of both urban population and rural population declined at similar rates (Table 7.1). This slowing of population growth is mainly attributed to the policy of birth control. Although urban Tibetans are allowed to have two children and rural

Tibetans can have up to five, privileges accrue to those having one child. In addition, many Tibetans feel that it is getting difficult to raise two children in urban areas, since both parents tend to work and the cost of living is now getting expensive. Thus, many Tibetans in urban areas are having only one child. In rural areas of Tibet, farmers are also starting to have fewer than five children because of the extension of birth control services and making those services available to farmers and herders, even in very remote areas.

The linear regression of the total population over the last 19 years ($Y_p = 3.4265x + 173.67$, $R^2 = 0.9962$) projected a population of 2,696,000 in year 2005; 2,868,000 by 2010; and 3,200,000 in 2020. This projection is quite close to those done by other scientists in Tibet (Sun Jinxing 1997; Yang Gaihe 1995). But this projected population in Tibet does not include people from outside of Tibet who have migrated there in recent years. It is expected that the next 15 years will see a sudden increase in the urban population of Tibet, due to continued migration from rural areas to cities and towns. Furthermore, administrative changes may change some counties into towns or even cities. Such changes, however, will not make much difference to the overall population growth rate in Tibet. The natural growth rate of the Tibetan population will remain about 1.3-1.5%. However, migration of other groups from other parts of China to the Tibet

Table 7.1: Recent population (in millions) and growth rate (%) in Tibet

Year	Urban population		Rural population		Total population	
	Population (million)	Growth rate (%)	Population (millions)	Growth rate (%)	Population (millions)	Growth rate (%)
1981	0.183		1.676		1.859	
1982	0.179	(-1.91)	1.713	2.17	1.892	1.77
1983	0.187	4.57	1.743	1.79	1.931	2.06
1984	0.200	6.87	1.766	1.29	1.966	1.83
1985	0.205	2.34	1.789	1.32	1.994	1.42
1986	0.205	0.29	1.819	1.65	2.024	1.51
1987	0.263	27.97	1.816	(-0.16)	2.079	2.70
1988	0.278	5.65	1.844	1.58	2.123	2.10
1989	0.360	29.63	1.798	(-2.52)	2.159	1.70
1990	0.356	(-1.14)	1.873	4.19	2.180	0.99
1991	0.362	1.63	1.855	(-0.98)	2.217	1.72
1992	0.370	2.07	1.882	1.47	2.252	1.57
1993	0.378	2.24	1.910	1.48	2.288	1.60
1994	0.384	1.69	1.935	1.29	2.319	1.35
1995	0.398	3.51	1.961	1.38	2.360	1.73
1996	0.404	1.43	1.989	1.39	2.393	1.40
1997	0.417	3.22	2.010	1.07	2.427	1.43

Autonomous Region is expected to increase gradually over the next 15 years. Previously people in central China had been worried about the high altitude of Tibet. With the improvement of infrastructure, food, housing, and transportation in Tibet, people are no longer so afraid of high altitude and bad conditions. Generally, facilities and conditions are now good enough to support the move of people from central China to the Tibet Autonomous Region. Since 1992, and particularly since 1994, the overall infrastructure, living conditions, and employment opportunities have improved considerably due to support from both the central government and sister provinces in China. These improvements have led increasing numbers of people to migrate from central China to the Tibet Autonomous Region as "floating population". These people mostly stay in urban areas where the living conditions and

employment opportunities are much better than in rural areas. Very few people from central China, especially Han Chinese, have stayed in rural Tibet, except for a few Chinese Moslems. Under this scenario, the urban population is expected to increase rapidly in the near future. The provincial migration between the Tibet Autonomous Region and other provinces in China in 1991 was -2,300 people, which means that 2,300 people left Tibet for the outside, whereas in 1994, there was a net gain of 2,000 people coming into Tibet. Since that time there has been much more migration into Tibet from other provinces. With the current trend, by 2005 the urban population of Tibet will increase to 700,000, of which 500,000 will be local people. The total population of consumers is expected to be more than 3 million by year 2005 and 4 million by year 2010.

Trends in Income and Level of Consumption

Tables 7.2 and 7.3 present the data on recent changes in income and the level of consumption. Several trends are evident.

the income gap between urban and rural people in Tibet was significantly higher. The gap in consumption levels was also very high. The gap of consumption level between non-farmers and farmers was 5.05 in 1997,

Table 7.2: Income and expenditures in rural and urban areas of Tibet by year

		1990	1991	1992	1993	1994	1995	1996	1997
Per Capita income (Yuan yr ⁻¹)	Salary of staff	3,181	3,355	3,448	4,085	7,115	7,382	11,087	10,098
	Urban	1,685	2,111	2,208	2,504	3,596	4,460	5,912	5,9130
	Rural	592	617	653	706	817	878	975	1085
	Ratio of urban to rural	2.85	3.42	3.38	3.55	4.40	5.08	6.06	5.45
Per Capita Expenditure (yuan yr ⁻¹)	Tibet	734	840	905	931	1,110	1,202	1,312	1,471
	Farmers	485	554	594	591	694	762	873	939
	Non-farmers	2,290	2,628	2,874	3,083	3,094	3,981	4,023	4,744
	Ratio of non-farmers to farmers	4.72	4.74	4.84	5.22	4.46	5.22	4.61	5.05

Table 7.3: Spending on basic needs and food, and their percentage of total spending in rural areas

Year	Total exp. (yuan)	Basic Needs		Food	
		Cost (yuan)	(%)	Cost (yuan)	(%)
1985	269	268	99.6	184	68.3
1986	257	256	99.3	179	69.6
1987	245	243	99.1	171	69.9
1988	271	268	98.7	179	66.1
1989	289	285	98.4	187	64.5
1990	346	340	98.5	252	72.9
1991	389	381	98	268	68.9
1992	544	536	98.5	387	71.1
1993	638	619	97.1	497	78
1994	788	763	96.7	552	70
1995	896	873	97.3	667	74.3

Both income and consumption have been increasing rapidly, but the growth of both in urban areas has been much faster than that in rural areas.

The differences in income and consumption between urban and rural areas have been growing significantly. The per capita income in urban areas was 2.8 times that of rural areas in 1990, while in 1995, it was 5 times. Compared to the average in China overall,

an increase from 4.72 in 1990. This gap continues to grow (Figure 7.1).

In rural areas of Tibet most livelihood expenditures are currently on food. The total expenditure of farmers on livelihood at present is about 800 yuan/person/year, which is pretty low, but out of that 70% is spent on food, and the Engel's rate is still increasing (Figure 7.2, Table 7.3). A household survey in Dazi County near Lhasa City showed that in 1996 farmers spent 63.3% of all livelihood expenditure on food, an indication that many farmers there were still at the level of 'extreme poverty' (Liu Wei 1998). Nevertheless, Dazi County is one of the richest and best-located counties in Tibet, since it is close to Lhasa and has good land, water resources, road access, and infrastructure. Therefore, we can extrapolate that, in Tibet as a whole, the living standard remains very poor, although there has been tremendous progress in recent years.

Rural Tibetans spend a much higher percentage of their total livelihood expenditure on food than those living in other rural areas of China (58.6%). As pointed out earlier, the per capita calorie intake in Tibet is lower than that in central China. A household survey in

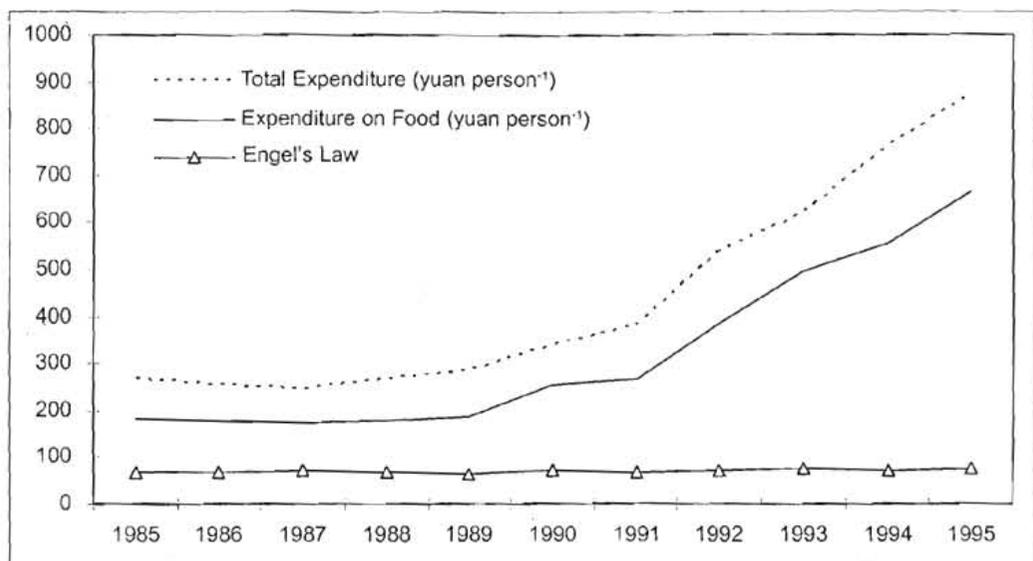


Figure 7.1: Total expenditure on livelihood and food by farmers in Tibet

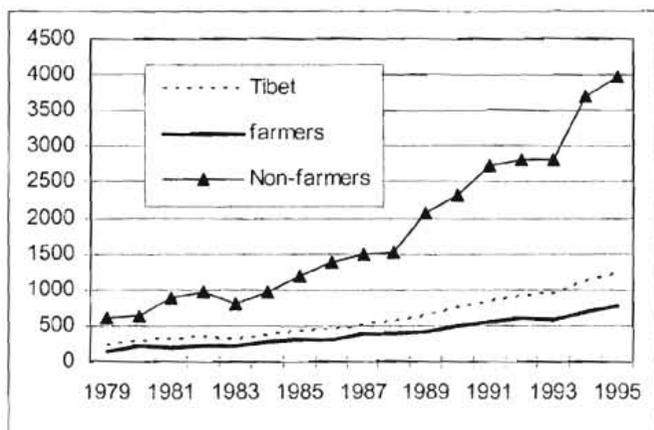


Figure 7.2: Per capita expenditure (yuan)

Zha'ngang, Shigatse City, Linzhou, Gyantse, Dingri, and Dazi County during 1996-1998 suggested that more than 85% of the total food in farmers' diets in Tibet is tsampa. Farmers consume very little meat, milk, vegetables, or fruit. In other words, although they spend a high proportion of their money on food, farmers still consume lower priced food of poor quality and nutritional value.

In urban areas of Tibet, the average annual per capita income is about 6,000 yuan, and the average per capita annual expenditure on livelihood is about 5,000 yuan. Both are

more than 5 times higher than the figures for rural Tibet. Furthermore, the 57.3% of the total expenditure on livelihood that went to food was much less than that of rural areas of Tibet. The living standard and quality of life in urban areas is much better than in rural areas in terms of food, housing, public facilities, services, transportation, and communication. With such an increasing gap between rural and urban living standards, more and more rural people can be expected to migrate to urban areas. However,

the employment opportunities in urban areas are often taken by people from outside of Tibet, as most of the people from central China are more competitive and skilled than local farmers and herders. No regulations assign job priority to the indigenous population. In addition, the lack of labour-intensive industries, which absorb more population and provide more employment, mean that job growth is low. The large gap between rural and urban living standards, together with the poor employment outlook for newly urbanised farmers and herders, is likely to reduce the stability of society. Therefore

institutions, the public, and decision-makers should consider providing more opportunities for farmers and herders to generate income, and give high priority to improving their well-being and living standards. Education, training, improving their competitiveness, and promoting employment for the local farmers and herders should be given high priority.

Changing Trends in Food Consumption and Preferences

All food items consumed in Tibet in the last 15 years were converted into calorie equivalents. The proportions of each food item in total calorie intake were calculated. Figure 7.3 presents the result.

Consumption of cereals has been declining among the urban population, whereas it is still increasing slightly among the rural population. In urban areas, about 78% of total calorie intake was from cereals in 1989, and 62% in 1995, whereas in rural areas, it has increased to 88% in 1995 from 80% in 1989. Both in rural and in urban areas, the consumption of barley as a staple food grain has been declining very significantly in recent years. At present, according to a survey of typical households in Lhasa, fewer and fewer young people are taking tsampa as a staple food grain. Among 20 randomly selected households in Lhasa City, barley made up only 34% of the total food grain consumed. Some of the households even did not have any tsampa. Most tsampa was eaten at breakfast, and only 25% of the households took tsampa as their staple food. Most of the households now take wheat and rice as staple food grains. But many households expressed that only 10 years ago, tsampa had been the main food grain. With this trend, by 2005, about 20% of Tibetans may take rice and wheat as their staple food grains instead of barley, and by 2010 this may increase to 30%.

Comparing urban with rural areas of Tibet, food grain and alcohol consumption in rural areas are much higher than in urban areas.

The urban population eats more meat, milk, and vegetables than the rural population. It suggested that the food preferences between the two are now quite different.

In urban areas, the consumption of meat, milk, eggs, and vegetables has been increasing very rapidly since 1990, while in rural areas, it has been decreasing. This is mainly due to higher salaries and benefits gained by official staff and cadres in the early 1990s. The price of locally produced food has increased only a little while the price for exotic food has increased, thus the relative purchasing power of farmers and herders has been reduced.

In general, the urban populations of Tibet are now starting to seek low-calorie but high-protein food, while rural farmers are consuming locally produced food grain rather than meat and milk. The food consumption structure in rural areas still remains traditional, while the food preferences in urban areas of Tibet are changing very drastically towards a Chinese style.

Trends in Food Demand

Many factors, such as food preferences, income level, age, food quality, and food availability, affect demand for food. When food availability is relatively constant or fixed, population and income growth are the main influences on the growth of food demand. When the population and food availability are relatively constant, income growth is the dominating factor that raises food demand. When income is not increasing rapidly and food availability is constant, population size is the dominant factor that increases the food demand. When both income and population are increasing and food availability is improving, then the food demand and the amount of food consumed will increase very rapidly. This is exactly the case in Tibet. Assuming that food availability is improving steadily, and taking population and income as the main factors affecting food demand, the growth rate of food demand will depend on the population growth rate and per capita

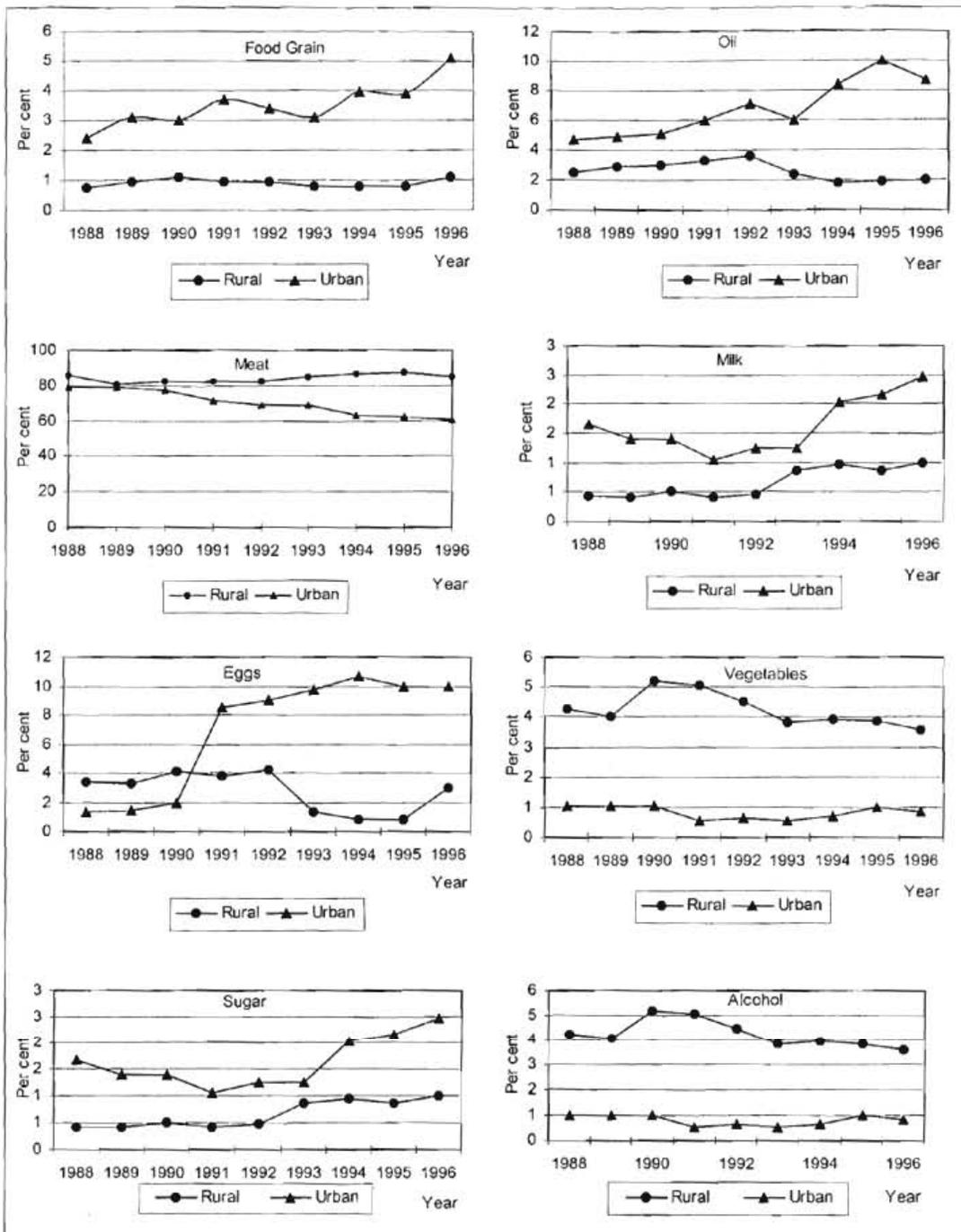


Figure 7.3: Changes in proportion of food consumption in Tibet

income. The increase of effective demand for food is often reflected in the growth rates of consumption of different foods, which are determined by income elasticity (Zhu Xigang 1997). Under this assumption, the growth rate in food demand can be estimated using following formula:

$$R = P + E_{dy} Y$$

Where

R = Growth rate in food demand

P = Population growth rate,

Y = Growth rate in total income

E_{dy} = Income elasticity of food consumption

Tibet, with average growth rates of 14.2 and 13.5%, respectively (Table 7.4). But the rate of consumption of each food is mainly determined by the ratio of income elasticity to consumption of each food.

Income elasticity to food consumption

The elasticity of gross per capita income and per capita GDP to different foods consumed were estimated (Table 7.4). In urban areas, the elasticity of per capita income to milk consumption was the highest, at 2.03. Urban dwellers increase their consumption of milk (mainly in the form of butter) with increase of per capita income. The per capita income elasticity to consumption of eggs, vegetables, and meat is also very high, but the correlation to consumption of cereals and alcohol appears to be negative. All these indicate that the direct consumption of cereals is declining, while the indirect consumption of cereals is rising due to the increasing consumption of livestock products in urban areas of Tibet. The food preferences in urban areas of Tibet now have shifted towards higher protein content food and vegetable food, instead of the food-consumption structure of just 10 years ago, which was based on cereals. In rural Tibet, although the per capita income elasticity to consumption of milk, vegetables, and sugar also appears to be high, there is also positive elasticity of income to consumption of cereals, which remain the food preference in the rural areas of Tibet.

Trends in food consumption

As discussed earlier, there have been dramatic changes in food preferences in both rural and urban areas of Tibet. The growth rate of food consumption during the last 10 years also suggests that consumption of livestock, poultry, and vegetables has been increasing significantly while the rate of growth of food grain and oilseed consumption have been slowing down. The speed of this change in urban areas is much faster than in rural areas. The consumption of cereals as a share of total food consumption in urban areas of Tibet is declining at a rate of 3.4% a year, while in rural areas it is increasing at a rate of 3.2%. There has been a rapid increase in the consumption of milk and eggs in both rural and urban areas of

Table 7.4: Growth rate in food consumption and income elasticity to food consumption

Food and income	Growth rate of income and food consumption (%)				Income elasticity index of food consumption					
	Urban	Rural	Average	GDP	By Per capita GDP			Urban	Rural	Average
					Urban	Rural	Average			
Income	20.14	17.28	18.71	14.10						
Food grain	(-3.40)	3.17	(-0.11)		(-0.24)	0.22	(-0.01)	(-0.17)	0.18	0.01
Rape seed	2.73	12.33	7.53		0.19	0.87	0.53	0.14	0.71	0.42
Vegetable	11.00	8.75	9.88		0.78	0.62	0.70	0.55	1.28	0.86
Meat	8.39	1.39	4.89		0.59	0.10	0.35	0.42	0.08	0.25
Milk	18.95	9.39	14.17		2.90	1.09	1.54	2.03	1.36	1.20
Eggs	12.84	13.48	13.16		0.91	0.96	0.93	0.64	0.78	0.71
Sugar	5.61	18.96	12.28		0.40	1.34	0.87	0.28	1.10	0.69
Alcohol	(-0.46)	1.27	0.40		(-0.03)	0.09	0.03	(-0.02)	0.07	0.03

The rate of growth in food demand

Food demand, driven by population growth and increase in per capita income, appears to be significantly higher than before. The demand for milk and eggs has rapidly increased at growth rates of 18.6 and 18.3%, respectively. Vegetable and sugar consumption also increased at growth rates of 10.5 and 14.8%, respectively. The demand for cereals by the urban population has declined slightly at a rate of -0.8%, whereas the growth rate of food grain demand in rural areas will still keep to about 3% in the near future (Table 7.5). The demand for livestock-based food and vegetables in the urban areas is much higher than in rural Tibet. With this pattern of growth of food demand in Tibet, the food preferences in rural and urban areas of Tibet will soon be totally different from each other. The food preference and food consumption structure in urban areas is now getting close to the Chinese diet, while, in rural Tibet, food preferences will maintain more traditional: tsampa, yak meat, butter tea, and chang (alcohol brewed from barley).

production, including both food quantity and food quality. The socioeconomic development level of different regions largely determines the level of food consumption, while the regional differences in food production affect the availability of food. However, the predominant factors affecting the zonal variations in food consumption and demand are variation of population and differentiation of per capita income.

Zonal variations in population

The analyses of population differentiation and growth among the prefectures and farming systems of Tibet were made based on the population censuses in 1982 and 1990 and the population data of 1995 (Table 7.6). The population in Tibet is unevenly distributed, and there is great variation in the population among the different prefectures and farming systems in Tibet.

Over 60% of the population is distributed in the river valleys in the upper reaches of the Yalungtsangpo River and its main tributaries,

Table 7.5: Growth rate of food demand and food production in rural and urban areas of Tibet

Foods		Foodgrain	Rapeseed	Vegetables	Meat	Milk	Eggs	Sugar	Alcohol
Growth rate of Per Capita Food Consumption (90-96)	Urban	(-0.81)	6.18	13.62	13.30	19.70	19.89	13.32	2.86
	Rural	6.83	12.98	7.44	0.57	10.01	16.80	23.99	0.07
	Average	3.01	9.58	10.53	6.94	18.66	18.34	14.86	1.47
Growth rate of Per Capita Food Production (90-96)		3.02	11.69	2.7	2.27	7.87	21.39	/	/

The production growths of cereals, oilseed, and eggs are currently ahead of the growth of demand. But the growth rates of demand for other food, such as meat, milk, and vegetables, are much higher than the production growth (Table 7.5).

Zonal Variations in Food Demand

Many factors affect zonal variations in food consumption and demand. Variations in per capita GDP, per capita income, the level of consumption, food preferences and structure, and the population are the major factors. Another factor is the zonal variation in food

the Lhasa River and the Nyachu River. This area comprises only about 20% of Tibet. Generally, the population in the pastoral zone is sparsely distributed, particularly in Naqu and Ali prefectures. The population density is less than one person km² in these areas, while in the crop dominated and agro-pastoral zones, where the majority of the Tibetan population is concentrated, the population density can reach more than 20 persons km². The distribution of population in Tibet, to some extent, could reflect the differentiation of biophysical conditions and the level of socioeconomic development.

The population has grown since the 1970s due to the improved health care and socio-economic status of the people in Tibet. The average population growth rate from 1952-1959 was 0.9%, while during the 1970s and 1980s, the average rate was 1.8%. At present, population growth has slowed down to 1.4%. There was faster population growth in the pastoral-dominated zone than in the crop-dominated zone of Tibet (Table 7.6). Both Naqu and Ali prefectures, which are mainly pastoral, have population growth rates of more than 2%. While in the crop-dominated zone, the population growth rate was about 1.1% during 1990-1995. The agro-pastoral-forestry mixed zone in the southern parts of Tibet has kept the lowest population growth at a rate of 0.6%.

The per capita production value of agriculture varies among the prefectures and food production systems/farming systems, and this variation is increasing. The per capita production value of agriculture in Naqu Prefecture was about 1,104 yuan, while in the Shigatse Prefecture, it was 1,894 yuan; these figures increased by 113.74% and 422.05%, respectively, from 1985. There is a huge gap between the pastoral-dominated and cropping-dominated zones. The per capita production value of agriculture in the former is not only much lower, but also increasing more slowly than that of the crop-dominated zone. The growth of crop production value is much faster than production value of livestock in different zones (Table 7.7).

Table 7.6: Zonal variations of population in Tibet

Prefectures and farming systems of Tibet	Total population			1982 to 1990			1990 to 1995		
	1982	1990	1995	Increased	Growth rate	Annual growth rate	Increased	Growth rate	Annual growth rate
Lhasa	313,002	375,979	383,308	62,977	16.4	1.82	7,329	4.1	0.69
Changdu	444,584	500,173	530,616	55,589	13.1	1.46	30,443	6.5	1.08
Shannan	245,450	280,811	302,766	35,361	13.9	1.55	21,955	7.5	1.26
Shigatse	465,810	549,157	589,194	83,347	18.6	2.07	40,037	12.3	2.06
Nagu	245,594	293,842	330,286	48,248	19.3	2.15	36,444	12.4	2.07
Ali	494,48	616,39	686,23	12,191	24.8	2.76	6,984	10.6	1.78
Linzi	125,424	134,422	140,387	8,998	10.1	1.13	5,965	6.1	1.03
Crop dominated	672,079	793,361	839,304	121,282	15.6	1.74	45,943	6.8	1.15
Agro-pastoral	662,055	758,930	806,773	96,875	15.6	1.73	47,843	7.6	1.27
Pastoral	327,094	396,448	442,383	69,354	22.7	2.53	45,935	11.3	1.89
Agro-pastoral-forestry	228,084	247,284	256,720	19,200	10.3	1.15	9,436	3.5	0.59
Tibet Total	1,891,294	2,198,013	234,7175	306,711	16.6	1.85	149,157	8.5	1.42

Zonal variations in per capita gross production value of agriculture

Since it is difficult to get data for per capita income for different prefectures and farming systems, the per capita agricultural production value was taken as a reflection of the per capita income, as agricultural production (include cropping, livestock, forestry production) is the predominant economic sector in Tibet.

Zonal variations in food demand

The total food demands for each zone and prefecture in Tibet were estimated on the basis of the minimum requirement of per capita calories (2,500 Kcal day⁻¹). The data suggested that the minimum annual food demand (in food grain equivalent) in Tibet had increased 8,000 tonnes from 1982-1990 and 6,000 tonnes from 1991-1995. The total food demand on the basis of growth of

Table 7.7: Variability and growth of per capita total agricultural production value

	Per capita gross agricultural production value (yuan)			Per capita gross crop production value (yuan)			Per capita gross livestock crop production value (yuan)		
	1995	1985	Increase	1995	1985	Increase	1995	1985	Increase
Lhasa	773.3	267	189.5	482.8	109.9	339.5	284.8	105.3	170.6
Changdu	1616.3	343.6	370.4	724.2	79.6	810.1	767.3	201.7	280.4
Shannan	1305.7	473	176	726	155	368.3	550.6	183.9	199.3
Shigatse	1894.2	362.8	422	1249.6	191.3	553.2	626.1	141.1	343.7
Nagu	1004.5	470	113.7	23.2	9.4	146.7	981.1	429.2	128.6
Ali	1871.9	5883	218.3	92.3	37.9	143.3	1779.1	517.5	243.8
Linzhi	1395.7	512.3	172.5	539	201.9	167	413.9	194.9	112.3
Crop dominated	1289.2	321.5	300.9	940.8	172.3	445.9	334.9	96.4	247.5
Agro-pastoral	1601	373.7	328.4	775.2	107.1	623.9	766.5	203.6	276.4
Pastoral	1192.7	502.9	137.2	49.7	9.8	406.3	1142.8	447.7	155.2
Agro-pastoral-forestry	1636.9	429.6	281	693.4	148.7	366.3	588.6	182.4	222.7

population has been decreasing, but, as discussed earlier, per capita food consumption is increasing steadily.

In order to better understand the demand for food grain, meat, and milk in each prefecture and zone in Tibet, the minimum level of per capita consumption of food grain (210 kg), meat (23 kg) and milk (70 kg), which together provide 2,288 Kcal day⁻¹ per capita, were used for calculating the minimum

demand for these foods. Then, based on the population increase during 1982-1990 and 1991-1995, the minimum amount of increased food demand over the past years was estimated (Table 7.8).

The minimum total food demand in Tibet in 1995 was estimated as 569,900 tonnes, and the actual food grain demand in 1995 was about 492,500 tonnes. The demand for meat and milk were 54,000 tonnes and 168,890 tonnes, respectively, in 1995 (Table 7.9).

Table 7.8: Food demand increases in Tibet, 1982-1995

	Food consumption increase 1982-1990 (t)				Food consumption increase 1991-1995 (t)			
	In Grain equivalent	Grain	Meat	Milk	In grain equivalent	Grain	Meat	Milk
Lhasa	15,303	13,225	1,448	4,534	1,781	1,539	169	528
Changdu	13,508	11,674	1,279	4,002	7,398	6,393	700	2,192
Shannan	8,593	7,426	813	2,546	5,335	4,611	505	1,581
Shigatse	20,253	17,503	1,917	6,001	9,729	8,408	921	2,883
Nagu	11,724	10,132	1,110	3,474	8,856	7,653	838	2,624
Ali	2,962	2,560	280	878	1,697	1,467	161	503
Linzi	2,187	1,890	207	648	1,449	1,253	137	429
Crop dominated	29,472	25,469	2,789	8,732	11,164	9,648	1,057	3,308
Agro-pastoral	23,541	20,344	2,228	6,975	11,626	10,047	1,100	3,445
Pastoral	16,853	14,564	1,595	4,993	11,162	9,646	1,056	3,307
Agro-pastoral- forestry	4,666	4,032	442	1,382	2,293	1,982	217	679
Tibet Total	74,531	64,409	7,054	22,083	36,245	31,323	3,431	10,739

Table 7.9: Food demand in Tibet (1995)

	Population	In grain equivalent (tonnes)	Food grain (tonnes)	Meat (tonnes)	Milk (tonnes)
Lhasa	383,308	93,144	80,495	8,816	27,598
Changdu	530,616	128,940	111,429	12,204	38,204
Shannan	302,766	73,572	63,581	6,964	21,799
Shigatse	599,194	143,174	123,731	13,551	42,422
Nagu	330,286	80,259	69,360	7,597	23,781
Ali	68,623	16,675	14,411	1,578	4,941
Linzi	140,387	34,114	29,481	3,229	10,108
Crop dominated	839,304	203,951	176,254	19,304	60,430
Agro-pastoral	806,773	196,046	169,422	18,556	58,088
Pastoral	442,383	107,499	92,900	10,175	31,852
Agro-pastoral- forestry	256,720	62,383	53,911	5,905	18,484
Tibet in total	2,347,175	569,879	492,488	53,939	168,853



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