

## **Appendix A6**

### **Population Data**

#### *Population data used here*

Two sets of population data are available. The first set is the (unpublished) Ministry of Public Security records. These data are (implicitly) used in the National Income Accounts, when aggregating rural and urban consumption in the calculation of GDP. The published aggregate and per capita consumption data in the National Income Accounts allow the calculation of the underlying population data. The second set is reported in the population section of the *Statistical Yearbook*. According to the (ambiguous) explanations provided with this source, the pre-1982 data were taken from the annual reports of the Ministry of Public Security; the 1982-89 estimates are Ministry of Public Security figures that have been adjusted using the 1982 and 1990 national population censuses; for years after 1990, the Ministry of Public Security data are adjusted on the basis of the 2000 national population census (*Statistical Yearbook 2002*, p. 93). Presumably the 1990 data are based on the 1990 population census.

We use the Ministry of Public Security data implicit in the National Income Accounts for two reasons. First, the NBS uses them in deriving expenditure approach GDP, a key economic measure in China, and the NBS may have good reasons to do so which are not obvious to the public. Second, the household surveys conducted separately by the NBS in rural and urban areas cover only the registered households in each area. This implies that urban migrants from the countryside are excluded from the urban household survey. Rural income includes remittances from these family members, but it seems unlikely that rural living expenditures fully include the living expenditures of the urban migrants in urban areas.

The critical question is, are the income and consumption patterns of these urban migrants better reflected by the rural or the urban population data? If the former, it seems best to use the Public Security population data because they include these individuals in the rural population. If the latter, then it is best to use the *Statistical Yearbook* population data, which tend to include urban migrants in the urban population. We assume that the consumption patterns of these individuals are nearer to the rural averages, and thus we use the Public Security population data.

The nationwide and the provincial-level rural (urban) population data are obtained by dividing published *aggregate* nationwide rural (urban) household consumption in 1990 by rural (urban) published nationwide *per capita* household consumption in 1990 (both values from the national income accounts section of the *Statistical Yearbook*); the resulting values are a rural population of 898.27m, and an urban population of 236.30m, adding up to a total population of 1134.57m (compared to an implicit total population, obtained as aggregate nationwide household consumption divided by nationwide per capita household consumption, of 1134.89m). Population weights, used in various calculations in the paper, are obtained as 'rural population divided by (rural plus urban population)', and as 'urban population divided by (rural plus urban population'.

## Population Data

	Population (million)			
	Rural (farmers)		Urban (non-farmers)	
	1990	2000	1990	2000
Total	884.1392	917.88	241.0822	325.58
Beijing	4.5574	3.4968	7.4085	7.5393
Tianjin	3.7978	3.8052	4.7925	5.3057
Hebei	52.6992	53.6635	8.7946	12.7517
Shanxi	21.9072	23.4475	6.1798	8.5427
Neimenggu	14.6014	15.4655	7.0101	8.3926
Liaoning	22.6045	22.2988	16.7745	19.2890
Jilin	14.7704	14.8443	9.5915	11.7546
Heilongjiang	19.9953	20.6102	14.6776	17.3842
Shanghai	4.1991	3.3949	8.6006	9.7787
Jiangsu	53.0645	50.4889	14.3057	22.4169
Zhejiang	35.2544	35.1288	7.0512	9.7138
Anhui	47.3596	50.1816	8.3382	12.2290
Fujian	24.4824	26.7494	5.1319	7.0403
Jiangxi	30.5894	32.0485	7.7734	9.2373
Shandong	68.1972	65.7674	15.6115	23.6292
Henan	74.8983	76.6604	10.8908	17.6965
Hubei	41.0932	43.0216	11.9254	16.4761
Hunan	51.3993	52.4382	9.1879	13.0407
Guangdong	46.4758	51.5247	15.0035	23.4546
Guangxi	35.8625	39.1218	6.2595	8.3597
Hainan	5.0998	5.5896	1.3461	1.9300
Sichuan	91.6362	68.4539	15.8624	15.3636
Guizhou	28.1226	31.9634	3.9494	5.3593
Yunnan	31.8070	35.7394	5.0724	6.4195
Tibet	1.8200	2.0892	0.4000	0.4870
Shaanxi	26.3761	28.1358	6.2190	8.3701
Gansu	18.4031	20.7523	3.6206	4.8701
Qinghai	3.1685	3.6508	1.3202	1.5296
Ningxia	3.5395	3.9153	1.1137	1.5731
Xinjiang	7.9955	9.0934	7.2300	9.1695
Chongqing		24.3435		6.4804

Nationwide total population data are the sums across provinces. No implicit National Income Accounts population data for Tibet in 1990 are available; the data used here are from the population section in the *Statistical Yearbook*.

Sources: 1990: *GDP 1952-95*, numerous pages (data implicit in aggregate and per capita expenditure approach GDP values); 2000: *Statistical Yearbook 2001*, pp. 65f. (data implicit in aggregate and per capita expenditure approach GDP values). *Statistical Yearbook 1991*, p. 82, for Tibet in 1990.

### Alternative population data

The above population data differ from those in the population section of the *Statistical Yearbook*. The table below presents the latter.

Comparing the share of farmers according to the *Statistical Yearbook* population data to the share of farmers according to the population data in the previous table (based on the population data implicit in the National Income Accounts), the two are almost equal in 1990.

(See the last two columns of the table below.) In 1990, differences across provinces are on the order of a few, single-digit percentage points, except in the case of Xinjiang. In 2000, the differences are significant, at about 10-30 percentage points across almost all provinces.

In other words, for 1990, when we construct the joint basket, it does not matter much which population data are used to weight expenditures, quantities, and prices.

### Alternative Population Data

	Population (million)				Share of farmers: ratio	
	Rural (farmers)		Urban (non-farmers)		<i>Stat. Yearb.</i> to NIA data	
	1990	2000	1990	2000	1990	2000
Total	910.58	807.39	219.93	458.44	1.03	0.86
Beijing	4.45	3.10	6.37	10.72	1.08	0.71
Tianjin	3.98	2.80	4.81	7.21	1.02	0.67
Hebei	52.57	49.85	8.51	17.59	1.00	0.91
Shanxi	22.73	21.46	6.03	11.51	1.01	0.89
Neimenggu	14.97	13.62	6.49	10.14	1.03	0.88
Liaoning	23.11	19.39	16.35	22.99	1.02	0.85
Jilin	15.35	13.73	9.31	13.55	1.03	0.90
Heilongjiang	20.89	17.88	14.32	19.01	1.03	0.89
Shanghai	4.67	1.96	8.67	14.78	1.07	0.45
Jiangsu	54.47	43.52	12.59	30.86	1.03	0.84
Zhejiang	34.91	24.00	6.53	22.77	1.01	0.66
Anhui	48.57	43.21	7.61	16.65	1.02	0.90
Fujian	25.18	20.28	4.87	14.43	1.01	0.74
Jiangxi	31.20	29.94	6.51	11.46	1.04	0.93
Shandong	73.04	56.29	11.35	34.50	1.06	0.84
Henan	75.12	71.09	10.42	21.47	1.01	0.95
Hubei	43.71	36.04	10.26	24.24	1.04	0.83
Hunan	51.93	45.24	8.73	19.16	1.01	0.88
Guangdong	49.28	38.89	13.55	47.53	1.04	0.65
Guangxi	36.76	32.25	5.48	12.64	1.02	0.87
Hainan	5.31	4.71	1.25	3.16	1.02	0.81
Sichuan	91.97	61.06	15.25	22.23	1.01	0.90
Guizhou	28.53	26.84	3.86	8.41	1.00	0.89
Yunnan	32.46	32.86	4.51	10.02	1.02	0.90
Tibet	1.92	2.12	0.28	0.50	1.06	1.00
Shaanxi	27.07	24.42	5.81	11.63	1.02	0.88
Gansu	18.78	19.47	3.59	6.15	1.00	0.94
Qinghai	3.22	3.38	1.24	1.80	1.02	0.93
Ningxia	3.57	3.80	1.09	1.82	1.01	0.95
Xinjiang	10.87	12.74	4.28	6.51	1.37	1.33
Chongqing		20.67		10.23		0.85

The rural population in 1990, by necessity, was obtained as the difference between the total and “non-farmers.”

The last two columns take the share of farmers in the total population according to the *Statistical Yearbook* population data, and divide this share by the corresponding share according to the population data implicit in the National Income Accounts (NIA) (as given in the previous table).

Sources:

*Statistical Yearbook 1992*, p. 87; *2001*, p. 101; combined with previous table for ratios.

### *Impact of alternative population data on inequality*

The final table in this appendix examines the impact of the two different population data sets on inequality. The 1990 joint basket is still constructed based on the population data implicit in the National Income Accounts (which differ only marginally from those in the *Statistical Yearbook*), but in the calculation of the Gini coefficient in both 1990 and 2000 the population data from the *Statistical Yearbook* are used. For 1990 one would expect no differences to the case where the population data used in the Gini coefficient are those implicit in the National Income Accounts, since the population data are so similar, but in 2000, when the differences between the two population data sets are large, use of the *Statistical Yearbook* population data could make a difference to the Gini coefficients.

The Gini coefficients based on the implicit population data (in the National Income Accounts) are the same as reported in the last table in the paper, and repeated in the table below. As the results in the table show, the Gini coefficients based on the population data in the *Statistical Yearbook* are almost identical to those based on the implicit population data, both in 1990 and in 2000. The implications of special deflators on inequality presented in the paper, thus, are not dependent on our choice of population data.

#### **Gini Coefficients Across Provinces Using Different Population Weights, Joint Basket**

	1990		2000	
	without deflating	with deflating	without deflating	with deflating
<i>Rural</i>				
Implicit population data	0.1344	0.1060	0.1690	0.1650
<i>Statistical Yearbook</i> population data	0.1341	0.1053	0.1633	0.1625
<i>Urban</i>				
Implicit population data	0.1017	0.0647	0.1435	0.0848
<i>Statistical Yearbook</i> population data	0.1031	0.0663	0.1549	0.0904
<i>Province-wide</i>				
Implicit population data	0.1510	0.1186	0.1860	0.1473
<i>Statistical Yearbook</i> population data	0.1511	0.1184	0.1934	0.1502

#### ***References relevant for this appendix and not listed in the paper***

GDP 1952-95. *Zhongguo guonei shengchan zongzhi hesuan lishi ziliao* (The Gross Domestic Product of China 1952-1995). Compiled by the NBS' national income accounts division. Dalian: Dongbei caijiing daxue chubanshe, 1997.