LONG-TERM CHANGES OF CONSUMPTION EXPENDITURES IN JAPAN, 1874-1940

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In this paper we attempted to explore the long-term changes of the level and structure of personal consumption expenditures in pre-war Japan, based upon our new estimates of them using the commodity flow and retail valuation methods. Our estimates have not only been checked by the official national income estimates, but also by family budget surveys on farm and workers' households. We believe that these checks will fortify the reliability of our estimates, and that they will provide us with a critical evaluation of the existing official estimates of consumption, thereby making clear the weakness of these official estimates.

I. ESTIMATED RESULTS OF CONSUMPTION EXPENDITURES

IT IS EXTREMELY DIFFICULT for economists in any country to estimate personal consumption expenditures over a long period. We might, indeed, be able to compute them indirectly, for instance, by subtracting from the gross national product government expenditures and capital formation, the long-term estimates of which are available in Japan today, and then adjusting balances of international payments. To our regret, however, although direct estimates of government expenditures and capital formation are available, direct estimates of long-term personal consumption expenditures have not been attempted. However, recently I estimated long-term personal consumption expenditures after several years of research. I have made up a long series of personal consumption expenditures from 1874 to 1940, computed year by year by means of the commodity flow method, the retail valuation method, and other procedures. The results were made public in a volume: Miyohei Shinohara, *Kojin shōhi shishutsu* (Personal Consumption Expenditures), Chōki keizai tōkei (Estimates of Long-Term Economic Statistics of Japan since 1868), No. 6, Tokyo, Tōyōkeizaishimpō-sha, 1966.

Full data are shown in the volume above. The headings of every basic statistics table and the summary of estimating procedures are given in English, but the analyses of the findings led from the estimated results are written only in Japanese. Here I shall, therefore, confine myself to explaining the findings and their analyses in English. I hope readers interested in the more detailed estimating procedures will take the trouble to refer to the book itself.

Table 1 gives a series of personal consumption expenditures from 1874 to 1940 in current prices with the components shown in overlapping decades. Table 2 gives their percentage compositions. The constant price series, based

Table 1. PERSONAL CONSUMPTION EXPENDITURES IN CURRENT PRICES (in thousand yen)

Year	Food	Clothing	Housing	Fuel & Lighting	Medical & Personal Care	Transportation	Communication	Social Expenses	Education, Recreation, & Others	Total
1874～1883	416,001	49,573	45,383	34,730	24,253	1,514	478	36,915	24,695	633,542
1877～1886	466,540	54,447	52,927	35,216	30,242	1,753	720	43,329	28,295	713,469
1882～1891	522,112	64,377	72,016	34,312	38,806	3,157	1,035	49,240	33,147	818,202
1887～1896	673,020	99,641	95,051	35,704	47,580	7,064	1,818	63,564	42,852	1,066,294
1892～1901	1,038,860	157,363	131,214	50,279	69,084	16,181	3,725	116,394	66,258	1,649,358
1897～1906	1,443,573	186,402	180,073	68,192	87,126	28,851	6,644	174,324	93,287	2,268,472
1902～1911	1,825,521	237,091	254,599	94,924	87,574	46,114	10,148	208,050	123,079	2,887,100
1907～1916	2,286,195	341,148	344,016	134,106	108,918	70,159	14,923	224,621	167,882	3,691,968
1912～1921	4,191,161	920,639	520,588	273,999	228,159	150,868	27,478	270,246	356,534	6,939,672
1917～1926	6,614,943	1,431,933	960,119	452,850	419,888	292,447	45,887	384,053	624,440	11,226,560
1922～1931	6,866,671	1,336,002	1,395,106	514,562	508,599	383,467	62,351	417,560	766,730	12,251,048
1927～1936	6,248,798	1,385,791	1,527,637	523,456	611,225	398,948	76,267	352,955	867,787	11,992,861
1931～1940	7,043,455	1,840,447	1,765,581	624,299	815,055	493,476	95,646	405,661	1,135,128	14,218,748

Table 2. PERCENTAGE COMPOSITION OF CONSUMPTION EXPENDITURES IN CURRENT PRICES (percentage)

Year	Food	Clothing	Housing	Fuel & Lighting	Medical & Personal Care	Transportation	Communication	Social Expenses	Education, Recreation, & Others	Total
1874～1883	65.7	7.8	7.2	5.5	3.8	0.2	0.1	5.8	3.9	100.0
1877～1886	65.4	7.7	7.4	4.9	4.2	0.2	0.1	6.1	4.0	100.0
1882～1891	63.8	7.9	8.8	4.2	4.7	0.4	0.1	6.0	4.1	100.0
1887～1896	63.1	9.3	8.9	3.3	4.5	0.7	0.2	6.0	4.0	100.0
1892～1901	63.0	9.5	8.0	3.0	4.2	1.0	0.2	7.1	4.0	100.0
1897～1906	63.7	8.2	7.9	3.0	3.8	1.3	0.3	7.7	4.1	100.0
1902～1911	63.2	8.2	8.8	3.3	3.0	1.6	0.4	7.2	4.3	100.0
1907～1916	61.9	9.2	9.3	3.6	3.0	1.9	0.4	6.1	4.6	100.0
1912～1921	60.4	13.3	7.5	3.9	3.3	2.2	0.4	3.9	5.1	100.0
1917～1926	58.9	12.8	8.6	4.0	3.7	2.6	0.4	3.4	5.6	100.0
1922～1931	56.0	10.9	11.4	4.2	4.2	3.1	0.5	3.4	6.3	100.0
1927～1936	52.1	11.6	12.7	4.4	5.1	3.3	0.6	2.9	7.3	100.0
1931～1940	49.5	12.9	12.4	4.4	5.7	3.5	0.7	2.9	8.0	100.0

Note: Computed from Table 1.

Table 3. PERSONAL CONSUMPTION EXPENDITURES IN 1934–36 PRICES (in thousand yen)

Year	Food	Clothing	Housing	Fuel & Lighting	Medical & Personal Care	Transportation	Communication	Social Expenses	Education, Recreation, & Others	Total
1874～1883	2,065,956	94,270	400,494	83,590	81,422	5,727	1,299	356,701	93,226	3,182,685
1877～1886	2,197,342	104,774	412,477	87,818	98,538	6,864	2,117	348,439	100,147	3,358,516
1882～1891	2,460,638	138,141	435,296	96,413	128,254	11,315	3,399	360,272	166,018	3,799,746
1887～1896	2,797,112	227,331	474,178	106,644	151,037	23,268	5,639	423,250	256,111	4,464,570
1892～1901	3,110,852	319,654	520,895	117,191	170,236	48,799	8,958	502,501	308,528	5,107,614
1897～1906	3,267,191	327,547	608,433	130,919	173,247	76,068	12,973	540,884	321,982	5,459,244
1902～1911	3,475,123	361,929	716,409	153,614	156,587	77,686	17,392	543,011	325,960	5,827,710
1907～1916	3,972,546	473,747	703,688	201,738	181,018	84,750	23,635	520,212	372,893	6,534,227
1912～1921	4,703,622	703,251	737,673	284,651	241,360	144,286	28,496	441,001	493,647	7,777,987
1917～1926	5,536,744	893,231	1,038,815	374,139	329,214	240,849	34,673	391,652	683,401	9,522,718
1922～1931	6,078,622	1,017,462	1,304,782	456,639	420,620	328,087	51,370	402,234	818,049	10,877,865
1927～1936	6,356,584	1,349,934	1,440,466	519,570	590,759	379,144	73,233	365,537	905,804	11,981,031
1931～1940	6,542,951	1,565,213	1,627,958	572,159	739,410	491,311	87,641	384,834	993,334	13,004,811

Table 4. COMPONENT OF CONSUMPTION EXPENDITURES IN 1934–36 PRICES (percentage)

Year	Food	Clothing	Housing	Fuel & Lighting	Medical & Personal Care	Transportation	Communication	Social Expenses	Education, Recreation, & Others	Total
1874～1883	64.9	3.0	12.6	2.6	2.6	0.2	0.0	11.2	2.9	100.0
1877～1886	65.4	3.1	12.3	2.6	2.9	0.2	0.1	10.4	3.0	100.0
1882～1891	64.7	3.6	11.5	2.5	3.4	0.3	0.1	9.5	4.4	100.0
1887～1896	62.7	5.1	10.6	2.4	3.4	0.5	0.1	9.5	5.7	100.0
1892～1901	60.9	6.3	10.2	2.3	3.3	1.0	0.2	9.8	6.0	100.0
1897～1906	59.9	6.0	11.1	2.4	3.2	1.4	0.2	9.9	5.9	100.0
1902～1911	59.7	6.2	12.3	2.6	2.7	1.3	0.3	9.3	5.6	100.0
1907～1916	60.7	7.2	10.8	3.1	2.8	1.3	0.4	8.0	5.7	100.0
1912～1921	60.5	9.0	9.5	3.7	3.1	1.8	0.4	5.7	6.3	100.0
1917～1926	58.1	9.4	10.9	3.9	3.5	2.5	0.4	4.1	7.2	100.0
1922～1931	55.9	9.3	12.0	4.2	3.9	3.0	0.5	3.7	7.5	100.0
1927～1936	53.1	11.3	12.0	4.3	4.9	3.2	0.6	3.0	7.6	100.0
1931～1940	50.3	12.0	12.5	4.4	5.7	3.8	0.7	3.0	7.6	100.0

Note: Computed from Table 3.

on 1934–36 prices, are to be found in Table 3, and their percentages composition are shown in Table 4. As appears in Table 2, food, including beverages and tobacco, dropped from 65.7% in the decade 1874–1883 to 49.5% in the decade 1931–1940, while clothing rose from 7.8% to 12.9%, during the same period, i. e., an increase of approximately 65% in percentage composition. The rapid growth of transportation together with communications, from 0.3% to 4.2%, may be due to industrialization and urbanization. Housing has increased from 7.2% to 12.4% and medical and personal care expenses have increased from 3.8% to 5.7%, while fuel and lighting fell from 5.5% to 4.4% with a little irregular oscillation during the period. Education, recreation and other expenses, which cover expenses for school fees, stationery, theatre, movies, radio fees, etc., rose from 3.9% to 8.0%. Attention must be paid to the item of social expenses, which showed an increase during the take-off stage in the Meiji period (5.8% in 1874–1883 to 7.7% in 1897–1906), but which from then on showed a declining tendency throughout the period under review, with the sharpest drop in 1912–1921, and finally reaching a low of 2.9% in 1927–1940. Estimates of social expenses are based primarily on the income of service trades in the "Shuzeikyoku tōkei nempō-sho" (Annual Statistical Report of the Tax Bureau). Unless this trend is radically distorted, it can be considered that social expenses may have shown relative cuts during the long recession in the 1920's and during the period of a wartime economy from the Manchurian Incident through World War II (1931–1945).

The series shown in Table 3 are the totals of commodity flows and flows of services to consumers in 1934–36 prices, classified by expenditures. A trend in the relative proportions of component expenditures in real terms derived from Table 3 is shown in Table 4. This in contrast with changes in the proportions in the current price series (Table 2) shows some interesting conclusions. First, there is no great difference to be found in the percentages of food expenditures between the two tables. In clothing expenditures, however, a marked difference is to be seen, a rise in the current price share from 7.8% to 12.9%, or a rise of approximately 65%. In the constant price share this is a rise from 3.0% to 12.0%, or a sharp increase of fourfold for the period. This indicates that the relative price of clothing made a precipitous fall during the period. In any case such a sharp increase in the percentage for clothing in constant prices during 67 years must justifiably be said to be one of the most important results of the influences of pre-war industrialization centred around light industries, which showed up in this way in the consumption structure.

Meanwhile, the percentage for housing changed little (12.6% to 12.5%) in real terms despite an increase (7.2% to 12.4%) in current prices. Judging from the weights occupied by the house-and-land rents in our estimates of housing, these changes tell us that the relative prices of rents went upward. Fuel and lighting were reduced from 5.5% to 4.4% in current prices while they rose from 2.6% to 4.4% in real terms, owing to the long-term fall in the

relative prices of gas and electric lighting. The lower rate of proportionate increase of medical and personal care in current prices than that in real terms suggests that the cost of medical treatment and charges for the public bath and hair-cuts were reduced relatively. As is shown in the table, transportation and communications saw a drop in relative prices in the first half of the period.

Social expenses fell from 5.9% to 2.9%, to half of what they were, in current prices while in real terms they fell from 11.2% to 3.0% or a drop to about one-fourth. This naturally means a rise of relative prices in social expenses.

All the findings above mentioned are made clearer when we divide the current price percentages by the constant prices percentages. Table 5 shows the trend of relative prices for each item. From this table we see anew that in the first half of the period the rate of fall in relative prices was remarkably high in such items as fuel and lighting, transportation, communications as well as medical and personal care.

This may reflect the influences of outstanding drops in the relative prices of electricity, railroads, communications, and medical treatment during the same period. Taking into account the fact that the increase trends in electricity, communication services, and railroad transportation were slowed down around the year 1900, we are especially interested in the finding.

Next, it is necessary to analyse why there was little difference between the current and constant price series in food expenditure proportions. For, when Kuznets analysed the long-term changes in food expenditures in advanced countries, he found that, despite the growth in real income the percentage of food expenditures in current prices was comparatively stable, but that the food expenditure proportion in real terms dropped.[1] Needless to say, the amount of food put on the market increases in proportion with economic growth. That alone accounts for rises in the relative price of food; even if market prices as well as farm prices are fixed, an increase in the percentage of food put on the market has in itself the effect of raising the weighted average price of both. Kuznets explained that this was why there was little change in the proportion of food expenditures in current prices despite a drop in the proportion in real terms. In Japan, however, both of them headed towards a decline in the long run and, furthermore, brought about only a slight difference in absolute values. The reason for this is that a rise in the relative price of services would have cancelled the effect of the rise of the relative price of food which was promoted by an increase in the percentage of food marketed.

In comparison with Kuznets' result, the following two points are noteworthy in the case of Japan. (1) The proportion of food expenditures has tended downward (the rate of fall particularly marked after the 1920's). (2)

1 Simon Kuznets, "Quantitative Aspects of the Economic Growth of Nations: The Share and Structure of Consumption," *Economic Development and Cultural Change,* January 10, 1962.

Table 5. RELATIVE PRICES OF FLOWS OF GOODS AND SERVICES TO CONSUMERS

Year	Food	Clothing	Housing	Fuel & Lighting	Medical & Personal Care	Transportation	Communication	Social Expenses	Education, Recreation, & Others	Total
1874～1883	101.5	264.3	56.8	208.5	149.7	132.7	184.9	51.8	133.2	100.0
1877～1886	100.0	245.3	60.4	189.2	144.8	120.3	160.4	58.5	133.5	100.0
1882～1891	98.6	216.7	76.7	165.6	140.9	129.8	141.9	63.7	93.0	100.0
1887～1896	100.8	183.3	83.7	140.2	131.8	127.2	135.1	62.8	69.9	100.0
1892～1901	103.1	152.3	78.0	132.8	125.7	102.8	128.8	71.8	66.6	100.0
1897～1906	106.2	136.8	71.2	125.2	120.9	91.1	123.1	77.4	69.7	100.0
1902～1911	106.1	132.3	71.7	124.8	112.9	120.0	117.8	77.4	76.4	100.0
1907～1916	101.8	127.4	86.5	117.5	106.4	146.5	111.7	76.5	79.6	100.0
1912～1921	99.9	146.7	79.1	108.0	105.9	117.3	108.1	68.7	80.9	100.0
1917～1926	101.4	136.0	78.4	102.6	108.1	103.0	112.2	83.2	77.5	100.0
1922～1931	100.4	116.6	94.9	100.1	107.4	103.8	107.8	92.2	83.2	100.0
1927～1936	98.2	102.6	106.0	100.6	103.4	105.1	104.0	96.5	95.7	100.0
1931～1940	98.4	107.6	99.3	99.8	100.8	91.9	99.8	96.4	104.6	100.0

Table 6. ANNUAL GROWTH RATES OF REAL CONSUMPTION EXPENDITURES (percentage)

Year	Food	Clothing	Housing	Fuel & Lighting	Medical & Personal Care	Transportation	Communication	Social Expenses	Education, Recreation, & Others	Total
1877～1886/1874～1883*	2.07	3.65	0.99	1.67	6.56	6.21	17.69	Δ 0.78	2.41	1.81
1882～1891/1877～1886	2.29	5.69	1.08	1.89	5.42	10.51	9.94	0.66	10.64	2.50
1887～1896/1882～1891	2.60	10.48	1.73	2.04	3.33	15.51	10.65	3.28	9.06	3.28
1892～1901/1887～1896	2.12	7.05	1.90	1.90	2.42	15.96	9.70	3.49	3.79	2.73
1897～1906/1892～1901	0.98	0.50	3.16	2.24	0.36	9.29	7.68	1.48	0.86	1.34
1902～1911/1897～1906	1.24	2.02	3.32	5.66	Δ 2.00	0.42	6.04	0.08	0.25	1.32
1907～1916/1902～1911	2.73	5.53	Δ 0.36	5.60	2.94	1.76	6.33	Δ 0.85	2.73	2.31
1912～1921/1907～1916	3.29	8.22	0.95	7.13	5.92	11.22	3.82	Δ 3.25	5.77	3.55
1917～1926/1912～1921	3.31	3.84	7.09	5.61	6.41	10.79	4.01	Δ 2.35	6.72	4.13
1922～1931/1917～1926	1.89	2.64	4.66	4.07	5.03	6.37	8.18	0.53	3.66	2.70
1927～1936/1922～1931	0.90	5.82	1.99	2.62	7.02	3.02	7.35	Δ 1.90	2.06	1.95
1931～1940/1927～1936**	0.72	3.77	3.11	2.44	5.78	6.70	4.60	1.30	2.27	2.07

Notes: (1) * 3 years, ** 4 years. (2) Computed from Table 4.

Only a small difference is to be found between the food expenditure percentages in current prices and those in real terms.

One more problem remains to be analysed with regard to the real term series, that is, the question of growth rates of real consumption expenditures. Table 6 shows changes in the annual growth rates. These rates were calculated from the increase ratios of the average values of two overlapping decades. The average decade values have the effect of evening out cycles occurring during each decade. Therefore, the waves here will be longer than Juglar Cycles, which are about 10 years long. In examining the long waves drawn by some of the items and those by the total real consumption expenditures, we notice that the latter, in particular, show fairly regular long swings. 1.81% for 1877–86/1874–83 indicates the growth rate at the bottom of the Matsukata Deflation, making a period of 22 years from this to the next trough (let us suppose it to be 1899–1908, mid-term between 1897–1906 and 1902–1911). Next, the period from the peak of 1887–1896 (3.28%) to that of 1917–1926 (4.13%) is 30 years. In the same way there are 28 years between the two troughs of 1899–1908 and 1927–1936. These data must not be taken as proving positively that the duration of a consumption swing was over 20 years, for the rise of decade averages is naturally a crude statistical technique. Nevertheless, we may say that long waves of more than two decades in length probably existed in the course of the growth of real consumption expenditures.

In comparison with the growth rates of total consumption expenditures, the trend of clothing is interesting to follow. It should be noted that its peak growth rate during the time of World War I preceded that of total expenditures by a decade and further that each trough of the clothing growth rate was always a decade ahead of that of total expenditures.

In contrast, the growth rates for housing appear to have been opposite the growth rates for total expenditures up to 1920. However, I cannot inquire into whether this was caused by possible defects in statistical data or whether it reflects actual trends.

The growth rates for food swayed slightly less than those for total expenditures and scarcely went up even during World War II, thus distinguishing themselves from the rates for total expenditures and for clothing.

The growth rates of fuel and lighting much interest us. On the basis of common sense we may anticipate that there will be no distinct cycle in the consumption of fire-wood and charcoal which have been used since long in the past. However, since such new forms of energy as gas and electricity came into use, the fuel and lighting expenses began to grow at a rapid rate. In fact, as the table shows, the growth rate rose remarkably after the decade of 1897–1906. It reached a peak in 1912–1921 though they had not shown any conspicuous long swings previously.

Long swings can also be found in education, recreation, etc., as well as in transportation and communications. Transportation and communications showed the widest swings. They showed surprising growth rates in the first

Table 7. SECULAR GROWTH RATES AND EXPENDITURE ELASTICITIES OF REAL CONSUMPTION EXPENDITURES

	Real Consumption Expenditures		R. C. E. per Capita of Population	
	Annual Growth Rate (%)	Expenditure Elasticity	Annual Growth Rate (%)	Expenditure Elasticity
Food (whole period)	2.12	0.841	0.97	0.713
Clothing (whole period)	4.96	1.968	3.77	2.772
Housing (whole period)	2.52	1.000	1.36	1.000
Fuel & Lighting (up to 1910)	2.11	0.921	1.12	0.868
(from 1911 on)	4.05	1.436	1.42	1.044
Medical & Personal Care (1875–1900)	4.21	1.565	3.28	1.843
(from 1900 on)	5.99	2.147	4.66	3.066
Transportation (whole period)	8.14	3.230	6.92	5.088
Communication (from 1889 on)	6.76	2.661	5.52	4.214
Education, Recreation, & Others (from 1890 on)	3.28	1.286	2.03	1.538
Total (whole period)	2.52		1.36	

Note: Annual growth rate is computed by the formula $log\ X_i = log\ a + bt$ (X_i=real consumption expenditures of each item). Annual growth rates of the divided periods used in computation of expenditure elasticities are as follows:

	Real Consumption	Per Capita Real Consumption		Real Consumption	Per Capita Real Consumption
1874–1910	2.29	1.29	1900–1940	2.79	1.52
1911–1940	2.82	1.52	1889–1940	2.54	1.31
1875–1900	2.69	1.78	1890–1940	2.55	1.32

Table 8. EXPENDITURE ELASTICITIES AMONG OVERLAPPING DECADES

Year	Food	Clothing	Fuel & Lighting	Housing	Education, Recreation, & Others
1877~86/1874~83	1.144	2.017	0.923	0.547	1.331
1882~91/1877~86	0.916	2.276	0.756	0.432	4.256
1887~96/1882~91	0.793	3.195	0.622	0.527	2.762
1892~1901/1887~96	0.777	2.582	0.696	0.696	1.388
1897~1906/1892~1901	0.731	0.373	1.672	2.358	0.642
1902~11/1897~1906	0.939	1.530	4.288	2.515	0.189
1907~16/1902~11	1.182	2.394	2.424	Δ 0.156	1.182
1912~21/1907~16	0.927	2.315	2.008	0.268	1.625
1917~26/1911~21	0.801	0.930	1.358	1.717	1.627
1922~31/1917~26	0.700	0.978	1.507	1.726	1.356
1927~36/1922~31	0.462	2.985	1.344	1.021	1.056
1931~40/1927~36	0.348	1.821	1.179	1.502	1.097

Note: Computed from Table 6. Medical & personal care transportation, communication, and social expenses are omitted. The figures show gross elasticities because they are computed not from the growth rates per capita expenditures.

half of the period when transportation and communication networks were expanded. Here I may have to give a word of caution: we obtained these results in spite of the fact that we included the household expenses not only for modern transportation and communications but also for such conventional traffic services as carts, wagons, *rikishas*, etc., which occupied a larger proportion at the earlier stage of the period under review.

In Table 7 are given the average annual growth rates for as long periods as possible. Annual growth rates per capita are presented in the right column of the table. The rate for each item, such as food, clothing, etc., divided by that of the total expenditures, gives the expenditure elasticity. In computing it we should, if possible, subtract the effects caused by an increase in population. The figures on the right side of each growth rate in Table 7 shows in this sense a net expenditure elasticity; it is calculated from the per capita growth rate. According to the results the elasticity of food comes to a low figure of 0.713. Medical and personal care shows high figures of 1.843 (up to 1900) and 3.066 (from 1900 on). Clothing, transportation, and communications stand also high with indices of 2.772, 4.214, 5.088 respectively.

In Table 8 the calculation of expenditure elasticities of five items has been attempted for 12 overlapping decades. They are, of course, gross elasticities disregarding price elasticities, and not on per capita basis. It is to be noted from the table that a certain kind of long swing exists in the elasticity of food, and that as time goes on the elasticity declines from the 1.182 of 1907–1916 to a very low level of 0.348 in 1931–1940. Such a trend reflects a rapid fall of the Engel's Coefficient during this period. Broadly speaking, the elasticity of clothing follows a course corresponding to its growth rate. So does that of fuel and lighting, which also shows high figures for 1897–1921 when its growth rate swells. Housing keeps a consistently low elasticity before 1892–1901 as compared with the figures thereafter. At any rate, we can conclude that each item of expenditure does not always show a stable trend in the expenditure elasticity.

Following the analysis of real consumption expenditures, the next problem we must deal with is how these expenditures changed per capita during the entire period 1874–1940. Table 9 (p. 226) shows this. The average annual rate of growth throughout the entire period amounts to 1.36%, the rate of food being 0.97%. The real per capita food expenditures stopped rising about 1920 and after the peak (¥ 102) of 1923–1925 began to decrease towards the ¥ 90 of 1940. In spite of the stagnation of per capita food expenditures, however, rises in other items encouraged the per capita total values to increase from the ¥ 178 of 1923–1925 to the ¥ 200 of 1937, although they could not arrest a fall which began thereafter and resulted in the ¥190 of 1940.

II. FOOD EXPENDITURES

In analysing the changes in the level and composition of personal consumption expenditures in Section I, the following two adjustments were

Table 9. CONSUMPTION EXPENDITURES PER CAPITA OF POPULATION, 1874–1940 (in yen)

Year	Current Prices		1934–36 Prices		Year	Current Prices		1934–36 Prices	
	Total	Food	Total	Food		Total	Food	Total	Food
1874	12	8	82	52	1908	68	44	127	77
1875	14	9	84	54	1909	67	42	128	75
1876	13	8	85	55	1910	68	42	132	79
1877	13	9	87	56	1911	74	47	128	78
1878	15	9	86	55	1912	81	52	130	80
1879	19	13	90	58	1913	85	56	132	82
1880	23	16	96	63	1914	72	44	127	77
1881	25	16	91	59	1915	71	43	132	83
1882	22	15	92	60	1916	81	46	138	84
1883	18	11	90	58	1917	104	61	143	86
1884	18	12	94	63	1918	148	89	150	88
1885	20	13	89	59	1919	214	127	163	96
1886	19	12	94	62	1920	211	131	158	95
1887	20	13	101	66	1921	208	123	168	101
1888	20	12	101	65	1922	213	124	176	101
1889	22	14	107	67	1923	214	124	177	102
1890	25	17	103	65	1924	217	126	178	102
1891	26	17	112	71	1925	224	133	179	102
1892	25	16	109	68	1926	214	123	179	101
1893	27	18	117	74	1927	207	116	181	101
1894	28	18	113	70	1928	205	112	184	101
1895	32	20	109	67	1929	195	107	180	99
1896	36	22	122	74	1930	177	95	178	96
1897	42	27	121	73	1931	157	79	180	97
1898	48	31	127	75	1932	154	78	174	93
1899	47	29	128	77	1933	168	86	183	99
1900	50	31	124	74	1934	185	92	192	98
1901	49	31	124	77	1935	191	96	189	95
1902	50	32	122	74	1936	197	99	192	94
1903	52	34	121	71	1937	222	107	200	94
1904	54	36	123	74	1938	247	115	201	94
1905	54	34	115	68	1939	253	129	192	98
1906	56	35	113	66	1940	285	139	190	90
1907	60	37	115	67					

introduced with regard to food expenditures. First, foods sold for market, except for farmers' own consumption, were adjusted to correct the over-estimate which may have arisen from the fact that the estimates were made as based on the Tokyo retail prices. The Tokyo retail prices were presumably higher than the average prices in the country as a whole. Therefore, the marketed portion of foods was adjusted *en bloc* by multiplying it by 95%; it was not possible to make adjustments for each item individually. The second adjustment is the exclusion of the military food consumption.

In examining the composition of foods in Section II, we will take up changes in the composition of "gross" food consumption without adjusting the figures as we did in Section I.

In Table 11, which is based on Table 10, the following changes in composition of food consumption are noted: (1) The ratio of rice expenditures to total food expenditures was reduced from the 37.9% of 1874–1883 to 27.2% in 1931–1940; the total of rice, *mugi*, miscellaneous cereals, wheat flour, and starch also fell from 44.3% to 30.6%; (2) Meanwhile, dairy and meat products (meat, meat products, eggs, milk, dairy products) achieved a rise from 1.0% to 6.9%; if marine products, and bottled and canned goods are included this totals from 13.5% to 17.4%; (3) bread and confectionery increased from 3.8% to 11.0%, tobacco from 1.0% to 5.1%; (4) Seasonings in the broad sense (*miso*, soy sauce, monosodium glutamate, salt, margarine, vinegar, fats and oils, sugar) started at 9.5%, fluctuated slightly, and ended at 7.8% in 1940; (5) Alcoholic drinks, tea and other beverages varied in percentage generally corresponding to the long swings.

We cannot help but be surprised to find that during 57 years values of real food expenditures showed a tremendous increase of 3.2 times. Meanwhile, however, population grew, too, from 36,080 thousand to 75,030 thousand, i. e., an increase of 2.08 times. Accordingly, a considerable portion of the great increase in food expenditures must have been absorbed in the increase of population. In order to examine such relationships we shall attempt to estimate per capita real food expenditures. Table 12 gives us the following: (1) Both rice and total food expenditures per capita have been stagnant, the former since 1912–1921 and the latter since 1917–1926. It may be one of the most important findings gained from this table that per capita food expenditures were almost stable in real terms for 20 years during the 1920's and 1930's. (2) On the other hand, meat and dairy products, as well as marine products increased during the same 20 years. Dairy and meat products increased 86.3% from 1912–1921 to 1931–1940 and marine products 48.5%, while alcoholic drinks, tea and other beverages fell by 21.9% during the same period. These increases and decreases cancelled each other out so that total food expenditures remained on almost the same level from the 1920's on. (3) For examples which almost followed the total food trend from the 1920's we can mention wheat flour and starch, seasonings, tobacco, and other foods. Barley and wheat, miscellaneous cereals, and vegetables declined during the same period. (4) However, before this period, namely, from 1874–1883 to 1912–1921, consistent increases can be seen in many items, of which the most outstanding growth rates were in dairy and meat products (450.7%), bread and confectionery (262.6%), tobacco (228.3%), wheat flour and starch (216.7%), and vegetables (105.3%). Other foods and beverages increased by 78.5%, rice by 54.2%, miscellaneous cereals by 47.5%, and seasonings by 37.4%. Barley and wheat (17.7%), alcoholic drinks, and tea and other beverages (13.3%) stand out clearly among others in their lower growth rates. Alcoholic drinks are found to have been stable in per capita real expenditures in the long run

Table 10. FOOD EXPENDITURES IN CURRENT PRICES (in thousand yen)

Year	Rice	*Mugi*	Miscellaneous Cereals	Wheat Flour & Starch	Fresh Vegetables, Fruit (Fresh & Dried)	Meat, Eggs, Milk & Related Products	Marine Products	Canned & Bottled Goods	Seasonings	Bread & Confectionery	Liquor, Beverages & Tea	Other Miscellaneous	Tobacco	Total (Unadjusted)
1874～1883	166,609	20,183	7,876	600	47,491	4,409	54,653		41,872	16,796	62,528	12,153	4,196	439,366
1877～1886	176,435	23,641	8,576	764	57,918	5,906	62,187		43,884	20,332	73,195	13,227	5,245	491,310
1882～1891	181,077	30,145	10,024	1,063	66,102	8,845	77,979		42,398	27,631	83,579	15,302	6,950	551,095
1887～1896	235,778	42,029	13,421	1,504	81,753	14,399	102,237		48,991	38,204	108,262	18,040	10,170	714,788
1892～1901	342,159	59,902	17,827	2,307	111,898	26,957	157,745		75,177	72,465	194,353	22,781	20,246	1,103,817
1897～1906	496,907	78,478	24,133	3,299	158,535	43,947	207,427		105,440	114,411	263,254	28,576	38,843	1,563,250
1902～1911	637,978	91,004	28,927	4,059	243,684	63,511	219,110	1,330	136,444	162,108	318,937	36,717	64,013	2,007,822
1907～1916	771,168	106,739	34,336	4,942	322,935	80,118	223,683	3,920	174,688	217,145	393,215	51,589	86,305	2,470,783
1912～1921	1,388,039	174,819	63,594	8,836	551,610	153,315	394,137	16,203	330,079	410,847	723,930	106,303	144,888	4,466,600
1917～1926	2,037,213	203,449	93,383	13,530	761,629	325,549	658,318	37,443	552,329	630,819	1,292,571	183,612	240,889	7,030,734
1922～1931	1,980,870	145,143	89,184	12,937	696,340	444,685	673,371	49,585	603,316	686,199	1,374,623	216,087	307,130	7,279,470
1927～1936	1,764,906	108,507	75,041	15,011	574,834	452,468	617,237	50,183	559,429	727,681	1,443,688	211,835	327,522	6,628,342
1931～1940	2,069,313	156,420	77,725	23,390	685,571	526,292	725,902	70,674	595,569	834,130	1,179,983	270,044	387,460	7,602,473

Notes: 1. Valued higher than the expenditures shown in Table 1, since the values above are without adjustments of overestimation by applying Tokyo retail prices to all goods and include the food expenditures by the army and navy.
2. Canned and bottled goods are supposed to have been consumed unprocessed before 1908.

Table 11. COMPONENT OF FOOD EXPENDITURES IN CURRENT PRICES (percentage)

Year	Rice	*Mugi*	Miscellaneous Cereals	Wheat Flour & Starch	Fresh Vegetables, Fruit (Fresh & Dried)	Meat, Eggs, Milk & Related Products	Marine Products	Canned & Bottled Goods	Seasonings	Bread & Confectionery	Liquor, Beverages & Tea	Other Miscellaneous	Tobacco	Total
1874～1883	37.9	4.6	1.8	0.1	10.8	1.0	12.5		9.5	3.8	14.2	2.8	1.0	100.0
1877～1886	35.9	4.8	1.7	0.2	11.8	1.2	12.7		8.9	4.1	14.9	2.7	1.1	100.0
1882～1891	32.8	5.5	1.8	0.2	12.0	1.6	14.1		7.7	5.0	15.2	2.8	1.3	100.0
1887～1896	33.0	5.9	1.9	0.2	11.4	2.0	14.3		6.9	5.3	15.2	2.5	1.4	100.0
1892～1901	31.0	5.4	1.6	0.2	10.2	2.4	14.3		6.8	6.6	17.6	2.1	1.8	100.0
1897～1906	31.8	5.0	1.5	0.2	10.1	2.8	13.3		6.8	7.3	16.9	1.8	2.5	100.0
1902～1911	31.8	4.5	1.4	0.2	12.1	3.2	10.9	0.1	6.8	8.1	15.9	1.8	3.2	100.0
1907～1916	31.2	4.3	1.4	0.2	13.1	3.2	9.1	0.2	7.0	8.8	15.9	2.1	3.5	100.0
1912～1921	31.1	3.9	1.4	0.2	12.4	3.4	8.8	0.4	7.4	9.2	16.2	2.4	3.2	100.0
1917～1926	29.0	2.9	1.3	0.2	10.8	4.6	9.4	0.5	7.9	9.0	18.4	2.6	3.4	100.0
1922～1931	27.2	2.0	1.2	0.2	9.5	6.1	9.3	0.7	8.3	9.4	18.9	3.0	4.2	100.0
1927～1936	26.6	1.6	1.1	0.2	8.7	6.8	9.3	0.8	8.4	11.0	17.3	3.2	5.0	100.0
1931～1940	27.2	2.1	1.0	0.3	9.0	6.9	9.6	0.9	7.8	11.0	15.5	3.6	5.1	100.0

Table 12. REAL FOOD EXPENDITURES PER CAPITA OF POPULATION IN 1934–36 PRICES (in yen)

Year	Rice	*Mugi*	Miscellaneous Cereals	Wheat Flour & Starch	Fresh Vegetables, Fruit (Fresh & Dried)	Meat, Eggs, Milk & Related Products	Marine Products	Canned & Bottled Goods	Seasonings	Bread & Confectionery	Liquor, Beverages & Tea	Other Miscellaneous	Tobacco	Total
1874～1883	18.28	2.43	0.90	0.06	4.34	0.69	5.82		5.14	1.82	18.41	1.44	1.13	60.46
1877～1886	19.07	2.57	0.97	0.08	4.72	0.91	6.53		5.21	2.20	17.54	1.53	1.24	62.57
1882～1891	21.15	2.81	1.08	0.10	5.44	1.30	6.78		5.09	2.97	17.44	1.61	1.49	67.26
1887～1896	22.43	2.96	1.17	0.11	5.98	1.66	6.80		5.56	3.72	19.62	1.68	1.79	73.48
1892～1901	21.71	3.09	1.17	0.13	6.37	2.05	6.44		6.10	5.10	21.77	1.81	2.08	77.82
1897～1906	23.34	2.94	1.19	0.15	6.73	2.45	5.50		6.17	5.63	20.06	1.92	2.17	78.25
1902～1911	25.32	2.89	1.25	0.16	7.65	2.78	4.85	0.05	6.24	5.38	18.91	1.99	2.33	79.80
1907～1916	26.41	3.03	1.27	0.16	8.66	3.14	5.52	0.14	6.55	5.48	19.34	2.17	2.65	84.52
1912～1921	28.19	2.86	1.33	0.19	8.91	3.80	6.66	0.30	7.06	6.60	20.86	2.57	3.71	93.04
1917～1926	28.94	2.48	1.43	0.22	8.52	4.97	7.75	0.54	7.79	8.87	23.72	3.08	5.12	103.43
1922～1931	29.04	2.13	1.39	0.21	8.14	5.85	8.68	0.73	8.06	10.70	22.28	3.41	5.42	106.05
1927～1936	28.55	1.84	1.21	0.24	8.03	6.46	9.89	0.78	8.03	11.51	18.22	3.33	5.01	103.10
1931～1940	28.99	1.74	1.13	0.29	7.83	7.08	9.89	0.91	8.19	11.42	16.30	3.45	5.16	102.38

Note: Simple arithmetic means of annual real per capita food expenditures for every 10 years. Therefore, they may not be equal to the decade average of real consumption expenditures divided by the decade average of population.

Table 13. CALORIE-INTAKE PER CAPITA OF POPULATION

(in calories)

Period	Nakayama's Estimate			Yamada-Hayami's Estimate				
	Staple [a]	Live-stock Products	Total	Staple [b]	Live-stock Products	Others [c]	Total	Per Unit Consumption [d]
1874～1877	—	—	—	1,567	2	94	1,663	2,132
1878～1882	1,349	2	1,351	1,664	3	135	1,802	2,328
1883～1887	1,520	3	1,523	1,727	5	147	1,879	2,434
1888～1892	1,830	3	1,833	1,856	7	165	2,028	2,617
1893～1897	1,876	7	1,883	1,834	9	178	2,021	2,608
1898～1902	1,941	7	1,948	1,863	11	188	2,062	2,671
1903～1907	2,006	8	2,014	1,959	12	185	2,156	2,815
1908～1912	2,119	9	2,128	1,969	14	190	2,173	2,829
1913～1917	2,084	10	2,094	1,986	16	216	2,218	2,896
1918～1922	2,189	12	2,201	2,059	20	269	2,348	3,057
1923～1927	2,031	15	2,046	1,975	25	308	2,308	3,005
1928～1932	1,866	19	1,885	1,807	29	325	2,161	2,825
1933～1937	1,815	24	1,839	1,827	34	337	2,198	2,818
1938～1942	1,960	23	1,883	1,836	30	345	2,211	2,860

Notes: a) Seiki Nakayama, "Shokuryō shōhi suijun no chōki henka ni tsuite" (On the Long-Term Changes in the Level of Food Consumption), *Nōgyō sōgō kenkyū*, Vol. 12, No. 4.

b) Cereals, potatoes, and beans. Beans refer to red beans and soyabeans in Nakayama's estimate, but Yamada-Hayami's includes them and other beans.

c) Sugar, fruit, vegetables, and aquatic products.

d) Total calories divided by population represented by the equivalent unit of 20–29 aged males.

despite various changes resulting from wars and business conditions.

Incidentally, Saburō Yamada and Yūjirō Hayashi tried to calculate changes in calorie-intake mostly on the basis of our estimated results on food expenditures. With their permission I shall show their data for the readers' reference in Table 13.

III. CHECKS BY OFFICIAL DATA

We shall compare our estimates with the official data given in the *Kokumin-shotoku hakusho* (National Income White Paper) for 1963 by the Economic Planning Agency. Table 14 shows where numerical differences lie between our estimates and the personal consumption expenditures reported in that report. On the whole, values in our estimates are much higher than those of the official data; there are conspicuous differences of 7.1% for 1930, 20.8% for 1935, and 6.3% for 1940. Our figures are very much higher for food expenditures, 47.5% for 1930, 59.0% for 1935, and 21.6% for 1940. I am afraid the readers may think our results unreasonable.

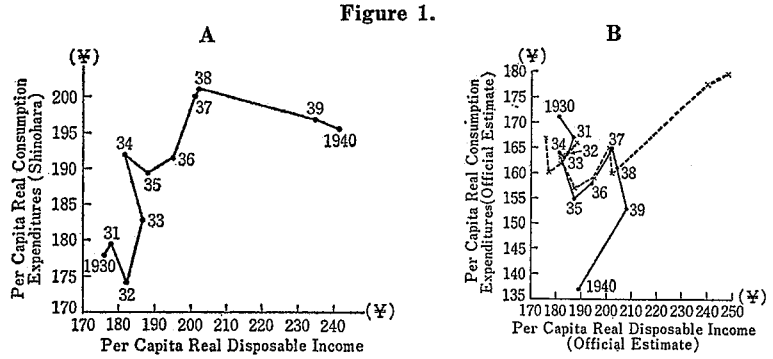
Table 14. COMPARISON WITH OFFICIAL DATA IN CURRENT PRICES

(in million yen)

Year	Personal Consumption Expenditures			Food Expenditures		
	Official Series (A)	Shinohara's Series (B)	(B)/(A)	Official Series (A)	Shinohara's Series (B)	(B)/(A)
1930	10,572 (%)	11,325 (%)	1.0712	4,106	6,057	1.4752
1931	9,103 (−13.9)	10,198 (−10.0)	1.1203	3,463	5,120	1.4785
1932	9,504 (+ 4.4)	10,154 (− 0.4)	1.0684	3,729	5,171	1.3867
1933	10,186 (+ 7.2)	11,228 (+10.6)	1.1023	3,972	5,732	1.4431
1934	10,610 (+ 4.2)	12,515 (+11.5)	1,1795	4,313	6,222	1.4426
1935	10,833 (+ 2.1)	13,081 (+ 4.5)	1.2075	4,136	6,575	1.5897
1936	11,443 (+ 5.6)	13,722 (+ 4.9)	1.1992	4,701	6,894	1.4665
1937	12,809 (+11.9)	15,583 (+13.6)	1.2166	5,360	7,522	1.4034
1938	13,886 (+ 8.4)	17,436 (+11.9)	1.2557	5,824	8,114	1.3932
1939	16,475 (+18.6)	17,913 (+ 2.7)	1.0873	7,063	9,129	1.2925
1940	19,155 (+16.3)	20,357 (+13.6)	1.0628	8,185	9,955	1.2162

Note: Figures in the column of "Official Series" are taken from the Economic Planning Agency, *Report on National Income*, Tokyo, 1963.

Figure 1.



I shall explain whether they really are or not through the comparative examination of the results and underlying data of the two estimates. Figure 1 plots the correlations of per capita disposable real income and per capita real consumption expenditures. In Figure 1-A the per capita real consumption and the per capita disposable income are compared with each other, but in Figure A the per capita consumption expenditures of our estimates and the per capita disposable income in the official estimates in current prices are both deflated by the aggregate consumer price index (implicit deflator) we computed. In Figure 1-B, however, the two real per capita magnitudes are all based on the *Report on National Income* for the year 1963. In Figure B consumption and disposable income in current prices are from the official estimates. However, two aggregate consumer price indices have been used in deriving real term series for consumption and disposable income. The solid line was derived from the index made from the official estimates and the dotted line was derived from the Shinohara's implicit deflator.

At all events, the figures obtained out of our estimates seem to follow the ordinary course in the consumption-disposable income ratio up until 1938. For 1930–1931 and 1934, with the business depression, the points become scattered above the usual line. Real expenditures began to fall in 1939–1940 when the war-time economy entered the last and the most serious stage.

On the other hand, official data employed unadjusted show an extraordinary relation, which is to be seen in the solid line of Figure 1-B. No matter what serious conditions were brought about by the Japan's war-escalation from the Manchurian Incident to the China Incident and on to World War II, it is difficult to believe that per capita real consumption expenditures should have followed a decreasing trend contrary to per capita real income. I cannot believe that except for their absolute level our estimates, which were carried out by compiling the flows of individual goods and services to consumers, should be incorrect in their general trend. As for their level itself it might perhaps give rise to a controversy; some people may doubt whether our estimates of consumption are not immoderately high on the ground that they should nearly coincide with official disposable income. However, at the same time there is a question as to whether the official data does not show numbers which are too low.

Employing our implicit deflator for official consumption and disposable income, we are given the dotted line as shown in Figure 1-B, which seems more moderate compared with the solid line, although it still does not show any reasonable curve for the period 1930–1938.

Results here depend so much upon the deflator used. Thus in Table 15 some deflators are checked against each other. The reason why I feel the official data strange and unreasonable is that the officially employed deflator (1936=100) shows an index number of 189.4 in 1940, when, at the same point, the lower figure of 175.0 is to be measured even by Mr. Morita's index which is constructed as an "effective retail price index" considering war-time black-market prices. Still more, the war-time black-market prices are considered

Table 15. COMPARISONS OF DEFLATORS

Year	Cost of Living Index		Aggregate Consumer Price Index (1934–36=100)		Morita's Effective Retail Price Index
	Asahi Newspaper (July, 1914=100)	Cabinet Bureau of Statistics	Shinohara's	Official Estimate	
1935	181 (100.0)		100.7	101	
1936	185 (102.2)(100.0)		102.9 (100.0)	104 (100.0)	100.0
1937	193 (106.6)(104.3)	100.0 (July)	111.2 (108.1)	111 (106.7)	108.6
1938	207 (114.4)(111.9)	110.1	122.9 (119.4)	122 (117.3)	120.3
1939	221 (122.1)(119.5)	121.2	131.8 (128.1)	152 (146.2)	134.8
1940	247 (136.5)(133.5)	143.4	149.7 (145.5)	197 (189.4)	175.0

Note: Morita's index is based on *Estimates of National Income of 1940–1944 Fiscal Years* by Ministry of Finance, March, 1947. It is computed by dividing the cash turnover index (the bank-notes circulation index multiplied by the velocity of circulation index) by the volume of commodity transaction index.

not to have as widely prevailed in 1940 as Morita's high index suggests. Here I should like to call the readers' attention to our implicit deflator standing between Mr. Morita's index and the Asahi's cost-of-living index.

Following the numerical comparisons with the data estimated in the past, we shall have to look further into their estimating procedures. The procedure for the official estimate of personal consumption expenditures are as follows: They are computed by the family budget survey method with all families grouped into farmers, non-farmers living in urban areas, and non-farmers in rural areas. The results from this are then summed up. For farmers we derive the per household expenditure in respect to owners, owner-tenants, and tenants, and also in respect to sub-divisions within those classifications, using the data in the "Nōka keizai chōsa" (Farm Households Economy Survey), and multiply them by the numbers of farm households obtained from the "Nōgyō dōtai chōsa" (Survey of Agricultural Dynamics). Sampling errors of the number of persons per household are corrected before the above-mentioned procedures are applied. For non-farmers in urban areas, calculation is made through the multiplication of household expenditures per family shown in the "Kakei chōsa hōkoku" (Family Income and Expenditure Survey) by the Cabinet Bureau of Statistics by the number of non-farm households in cities obtained from the National Census. Of course, in this case too, the correction of sampling errors is made concerning the number of persons per household. Lastly, expenditures of non-farmers in rural areas are estimated through using various adjustments on the basis of the average of the two foregoing cases. For the period after 1940, an extrapolation is made on the basis of consumption expenditures in officially controlled prices submitted to the Commission of the U. S. Strategic Bombing Survey, corrected by the effective prices.

Next, the following problems are to be examined with regard to the estimates for 1930–1940. The pre-war *Family Income and Expenditure Survey* conducted by the Cabinet Bureau of Statistics, on which the estimation of urban expenditures per household is based, is a survey carried out almost exclusively on families who rent rather than own their housing with a monthly income of ¥ 50–100. Therefore, the estimation partly depending on these data will apparently minimize the actual growth rate of personal consumption expenditures during 1930–1940; even though the actual average household expenditures may have risen, the survey shows a smaller increase since they are restricted to incomes less than ¥ 100 a month.

Although such surveys made during the war attempted to sample more families with an income over ¥ 100, the above defect seems to have remained in the data. The samples of families with over ¥ 100 in monthly income rose from 24.6% in 1931–1932 to 71.3% in 1939–1940. Samples in four income classes under ¥ 70–79, totalling 39.46% in 1931–1932, made a sharp drop to 5.9% in 1940. This indicates that due to the general increase in income it became difficult to find appropriate subjects for the survey among low-income classes. In the Family Income and Expenditure Survey the average real

income of all households is reported to have increased from ¥ 86.47 to ¥ 115.42, that is, a growth of 33.5%, during the period between 1931–1932 and 1939–1940. Corresponding to this, the real income wage index of the Bank of Japan (1926=100, average of men and women workers in private factories in Japan) rose from 88.1 (1932) to 134.8 (1940), i. e., an increase of 53.0%. During the same period the wage per working hour increased from 11.82 *sen*[2] to 19.62 *sen*, i. e., a rise of 66.0%, according to the Factory Statistics by the Ministry of Commerce. It may already be obvious that the Family Income and Expenditure Survey underestimated the growth rate of real income, hence minimized the increase rate for household expenditures based on it.

Another issue arises when the estimates of consumption expenditures for 1930–1940 through the family budget survey method are extended to those for 1940–1944 utilizing the retail valuation and commodity flow methods.

Table 16. COMPARISONS IN CONSUMPTION EXPENDITURE BETWEEN U. S. S. B. S. ESTIMATES AND OFFICIAL ESTIMATES

(in million yen)

	1940	1941	1942	1943	1944
U. S. S. B. S. Estimates (Fiscal Year)	26,707	27,342	28,488	30,504	31,478
Economic Planning Agency Estimates (Calendar Year)	19,155	20,701	28,734	26,001	26,554

Sources: Financial Bureau of Ministry of Finance, *Estimates of National Income of 1940–1944 Fiscal Year*; Economic Planning Agency, *Report on National Income*, 1963.

Table 16 compares the estimates of consumption expenditures in the Commission of the U. S. Strategic Bombing Survey data with the official estimates given by the Economic Planning Agency. The table shows a marked difference of 39% for 1940. However, the difference tends to be reduced thereafter, the U. S. Commission's data numbering 18.5% over the Economic Planning Agency data in 1944. The reason for the narrowing of the gap in percentages is that in the case of the extrapolation for 1940–1944 by the Economic Planning Agency adjustments are made between effective prices and official prices, while the U. S. Commission's data which is the basis of the above extrapolation are valued in terms of official prices. Therefore, the difficulty lies in the fact that in the beginning year of 1940 the U. S. Commission's estimate shows a figure no less than 39% over the result calculated through the family budget survey method. When the retail valuation and commodity flow methods are employed, such expenditures as to be regarded as costs or non-family expenses may possibly be included, thus creating overestimations. On the other hand, in the family budget survey method, expenses for second-hand goods are included which would act similarly. However, the results of the U. S. Commission's data are shown in official prices. Considering these matters, we can safely admit that the differ-

2 100 sen=1 yen

ence of 39% for 1940 between the two estimates is due to a deficiency (i. e., it is not representative) in the Family Income and Expenditure Survey by the Cabinet, on which the official estimates are based. The cause of the strange income-consumption relationship shown in Figure 1-B must be found not in the critical conditions of the war-time economy but rather in a defect in the source statistics.

Incidentally, according to the U. S. Commission's survey the estimates for food expenditures for 1940 amount to an enormous sum of ¥ 14,658 million, far over our estimated value of ¥ 9,955 million which is 21.6% above the official figure. Furthermore, the sum is much more than ¥ 11,027 million (about 33% above), the figure which we derived before we eliminated the food expenditures for the army and navy and a uniform cut of 5% on every item. The reason may be that, compared with the U. S. Commission's data, we estimated more expenditures on processed goods, seeds, feeds, fertilizer, etc. which should be substracted. The percentage of food expenditures in total consumption is 54.9% according to the data submitted to the Commission of U. S. Strategic Bombing Survey. It is astonishingly higher than our estimate of 48.9%, despite the fact that both used the same estimating technique.

IV. CHECKS BY FAMILY BUDGET SURVEYS

Our estimates of consumption expenditures should desirably be collated as closely as possible with the outcomes of family budget surveys. However, we must warn ourselves against too much confidence in these surveys. We ought to look into their authenticity as criteria for checks.

For the Meiji era we have no family budget survey worthy of the name except some data in the *Kahei seido chōsakai hōkoku* (Report of the Monetary System Investigation Committee), for which the survey method remains unknown. Figures in Tables 17 and 18 are quoted from this report. Since the survey on Gumma prefecture indicates the annual expenditures of *a middle-class family of five members*, the figure shown divided by 5 gives average personal expenditures for six periods, e. g., ¥ 14, ¥ 20, ¥ 24, ¥ 30, ¥ 36, and ¥ 36. Our personal expenditures corresponding to these six periods are derived from Table 9 except for the first period and the beginning year of the second period (1873); the results are ¥ 13 for 1874–1877, ¥ 20.8 for the third period, and ¥ 19, ¥ 23.8, and ¥ 27 for the other three. These are considerably below the figures in the survey of Gumma prefecture. This may be partly because the middleclass survey dealt with may have been actually closer to an upper middle-class than the national average and partly because Gumma prefecture may have had a higher consumption level than the other prefectures. However, there can be found no great difference between the two growth rates; in Gumma prefecture it rose by 80% from 1873–1877 to 1893 while our estimates become double during the same years. We can, therefore, say that our results have been checked with regard to the increase rate of expenditures for this period. The lower class may be thought of as

Table 17. SURVEYS OF FAMILY EXPENSES IN THE EARLY PERIOD OF MEIJI (I) (in yen)

Year	Gumma Prefecture Survey (Annual Values of Middle-class Family of 5)	Year	Tochigi Prefecture Survey (Annual Per Capita Values)								
			Agriculture			Industry			Trade		
			Upper Class	Middle Class	Lower Class	Upper Class	Middle Class	Lower Class	Upper Class	Middle Class	Lower Class
1868～1872	70	1868～1872	42.42	31.18	19.84	45.00	33.72	25.07	55.72	39.56	25.54
1873～1877	100	1873～1877	44.38	31.45	20.09	46.80	34.41	25.28	57.85	39.67	25.98
1878～1882	120	1878～1882	55.27	39.29	24.19	58.20	42.98	32.94	80.31	51.73	33.96
1883～1887	150	1883～1887	47.10	33.65	20.18	47.99	36.62	26.85	64.96	41.17	26.47
1888～1892	180	1888～1890	51.80	35.87	22.19	51.81	37.59	29.82	72.04	45.93	30.78
1893	180	1891～1893	54.21	37.55	23.17	53.37	39.59	31.57	75.28	48.61	32.43

Source: Kahei seido chōsakai, *Kahei seido chōsakai hōkoku* (Report of the Monetary System Investigation Committee), 1895, pp. 372 ff.

Table 18. SURVEYS OF FAMILY EXPENSES IN THE EARLY PERIOD OF MEIJI (II)
—Shizuoka Prefecture Survey in Annual Per Capita Values— (in yen and percentage)

	Year	Food		Clothing		Miscellaneous Expenses		Total	
Upper Class	1868	32.120	(47.0)	7.700	(11.3)	28.600	(41.7)	68.420	(100.0)
	1872	32.120	(43.5)	8.800	(11.9)	33.000	(44.6)	73.920	(100.0)
	1877	44.165	(47.7)	9.900	(10.7)	38.500	(41.6)	92.565	(100.0)
	1882	48.180	(43.5)	13.200	(11.9)	49.500	(44.6)	110.880	(100.0)
	1887	40.150	(42.7)	9.900	(10.5)	44.000	(46.8)	94.050	(100.0)
	1892	40.150	(37.8)	11.000	(10.4)	55.000	(51.8)	106.150	(100.0)
Middle Class	1868	20.075	(47.7)	4.400	(10.5)	17.600	(41.8)	42.075	(100.0)
	1872	20.075	(43.2)	4.400	(9.5)	22.000	(47.3)	46.475	(100.0)
	1877	32.120	(51.1)	4.400	(7.0)	26.400	(41.9)	62.920	(100.0)
	1882	40.150	(48.3)	9.900	(11.9)	33.000	(39.8)	83.050	(100.0)
	1887	24.090	(42.2)	5.500	(9.6)	27.500	(48.2)	94.050	(100.0)
	1892	28.105	(41.5)	6.600	(9.8)	33.000	(48.7)	106.150	(100.0)
Lower Class	1868	16.060	(64.6)	2.200	(8.9)	6.600	(26.5)	24.860	(100.0)
	1872	16.060	(57.0)	2.200	(7.8)	9.900	(35.2)	28.160	(100.0)
	1877	24.090	(60.2)	2.750	(6.9)	13.200	(32.9)	40.040	(100.0)
	1882	28.105	(51.6)	4.400	(8.1)	22.000	(40.3)	54.505	(100.0)
	1887	18.062	(53.1)	2.750	(8.1)	13.200	(38.8)	34.012	(100.0)
	1892	20.075	(50.3)	3.300	(8.3)	16.500	(41.4)	39.875	(100.0)

Note: Dates approximate.
Source: Same as Table 17.

having stood perhaps closer to the national average than the middle class surveyed at a period when agriculture played an important role.

Direct comparison is possible with the survey of Tochigi prefecture, for this survey shows annual values of per capita personal consumption expenditures. Strangely enough, it reports a very low increase rate during the years from 1868–1872 to 1891–1893. Agriculture (lower class) rose only by 16.8% and trade (lower class) by 27.0%. Considering our implicit deflator indicating no less than a 49.1% rise for the period from 1874–1877 to 1891–1893, we may well regard the survey of Tochigi prefecture as disqualified for a time-series analysis. We shall confine our comparison to the last term of the survey, 1891–1893, only. At that time, agriculture (lower class) averaged ¥ 23.17, differing only a little from the ¥ 26 in per capita personal consumption expenditures of our estimates for the same period. If we take the simple arithmetic mean of trade (lower class) and agriculture (lower class), we arrive at ¥ 27.8 and the difference is considerably reduced. Even the average of lower class and middle class in agriculture comes to ¥ 30 and causes no great difference from our estimates.

In the survey on Shizuoka prefecture, as in Gumma prefecture, the per capita consumption estimates are still higher than our estimates, even for the lower class. Although the figures for the middle and lower classes fluctuate irregularly around 1882, there is a small degree of increase seen in the period as a whole. However, a rise such as that seen from 1877–1892 is so small that we have doubts with regard to the time trend.

Only the percentages for food and clothing expenditures are helpful to us. In the case of the lower-class percentage of food expenditures lies between 50.3% and 64.6%, that of clothing between 6.9% and 8.9%, both of which are close to our estimates. Even though the average is assumed to be represented by the middle class, its food proportion would be roughly equal to ours, provided that food expenditures involved in miscellaneous expenses (for gifts and ceremonial purposes) were transferred to the sum of food expenditures.

Next we shall consult *Nihon no kasō shakai* (Lower Classes in Japan) by

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Date of Surveys	Feb. 1898	Feb. 1889	Nov. 1898	Nov. 1898	Nov. 1898	Nov. 1898
Occupation	*rikisha* man	artisan	lathe turner	finisher	worker in gun mfg.	lathe turner
Number of Family Members	3	3	3	5	3	4
Living Expenses	45.9 sen* (Daily)	33.3 sen (Daily)	20.54 yen (Monthly)	19.60 yen (Monthly)	17.60 yen (Monthly)	29.04 yen (Monthly)
Food Expenses	35.6 sen	25.7 sen	13.20 yen	14.75 yen	10.90 yen	19.10 yen
Proportion for Food	77.6%	77.2%	64.3%	75.3%	61.9%	65.8%
Annual Per Capita Consumption	33.5 yen	40.5 yen	82.2 yen	47.0 yen	70.4 yen	87.1 yen
Pages	42	44	227	228–229	229–230	230–231

* Including several miscellaneous expenses.

Table 19. CONSUMPTION EXPENDITURES IN THE FARM HOUSEHOLD ECONOMY SURVEY, BY MANKICHI SAITŌ

(in yen)

	Year	Food & Beverages	Clothing	House Repairing	Furniture & Utensils	Fire-wood, Charcoal & Oils	Education	Interest Payment & Others	Total	Food Proportion (%)	Clothing Proportion (%)
Owner	1890	119.00	18.00	10.00	5.00	10.00	3.00	31.00	196.00	60.7	9.2
	1899	181.00	27.00	20.00	8.00	15.00	9.00	46.00	306.00	59.2	8.8
	1908	278.00	40.00	16.00	13.00	22.00	19.00	72.00	406.00	59.2	8.7
	1911	334.00	50.00	27.00	18.00	26.00	19.00	81.00	555.00	60.2	9.0
	1912	391.00	54.00	24.00	20.00	27.00	24.00	94.00	634.00	61.7	8.8
	1920	679.57	161.17	43.95	20.37	47.71	30.17	243.80	1,226.74	55.4	13.1
Tenant	1890	76.00	8.00	3.00	—	6.00	—	14.00	107.00	71.0	11.3
	1899	124.00	17.00	4.00	—	9.00	—	26.00	180.00	68.9	9.4
	1908	178.00	17.00	7.00	—	13.00	—	38.00	253.00	70.4	5.5
	1911	218.00	23.00	9.00	—	15.70	—	46.00	311.00	70.1	6.4
	1912	256.00	24.00	10.00	—	17.00	—	50.00	357.00	71.7	6.7
	1920	427.01	53.91	16.16	—	28.32	—	119.98	645.38	66.2	8.4

Note: The number of household members for 6 years is 6, 7, 7, 7, 7, and 6, as to owners and 5, 6, 6, 6, 6, and 6, as to tenants.

Source: Taizō Inaba ed., *Fukkokuban nōka keizaichōsa hōkoku—Chōsa-hōhō no hensen to ruinen seiseki* (Reprinted Edition of the Report of the Farm Household Economy Survey—Changes in Survey Method and Annual Results), Oct., 1952.

Gennosuke Yokoyama.[3] This book offers a great deal of material on the lives of the lower classes in the Meiji period. (See the table on p. 237.)

Viewed generally, all the families shown above appropriated 60–70% of living expenditures for food. Our consumption estimates gave a per capita value of 48 yen (naturally including farm families) and a percentage for food expenditures of 64.8% for 1898. However, Cases 2 and 4 show food expenditure percentages of 77.2% and 75.3% though both are only with 40–50 yen in annual per capita consumption. The cases showing percentages of 60–70% have respective values of 82.2 yen (Case 3), 70.4 yen (Case 5), and 87.1 yen (Case 6). Is our estimate of food expenditures (64.8% in 1898), therefore, too conservative?

In order to answer this question we shall have to turn to an analysis of the Farm Household Economy Survey. We shall here take up the famous survey by Mankichi Saitō and sort out from it expenditure for food and beverages, clothing, house repairs, furniture and utensils, fire-wood, charcoal, oils, education, interest payments and miscellaneous expenses, assuming that the sum of them equals total consumption expenditures. We shall thereupon look into the absolute values and the percentages for food and clothing expenditures classified by owners and tenants.

Table 19 shows the following:

(1) The simple arithmetic means of per capita consumption expenditures of owner and tenant households are represented as follows:

(in yen)

	1890	1899	1908	1911	1912	1920
Saitō's Survey	27.04	36.86	53.94	65.56	75.04	156.01
Per Capita Consumption by Shinohara (National)	25.12	47.12	68.26	74.17	80.78	211.45

The difference between the average nation-wide per capita consumption and those of farm households is seen to have increased as time went on although it was almost imperceptible in 1890. This can be surmised partly because the proportional share of the number of inhabitants in urban areas or non-farm households increased.

(2) The average food expenditure percentages of owners and tenants are as follows:

(%)

	1890	1899	1908	1911	1912	1920
Saitō's Survey	65.9	64.1	64.8	65.2	66.7	60.8
Food Percentages by Shinohara (National)	66.3	62.4	64.2	62.9	64.2	61.8

Both are unexpectedly close to each other in levels. Therefore, even though the food expenditure percentage of urban worker's households may

3 Iwanami bunko series, Tokyo, Iwanami-shoten, 1949.

show 70–79% on an average, the average nation-wide percentage for both farmers and non-farmers is supposed to be in the 60–69% range.

(3) The average percentages for clothing expenditures of owners and tenants are as follows:

(%)

	1890	1899	1908	1911	1912	1920
Saitō's Survey	10.3	9.1	7.1	7.7	7.8	10.8
Clothing Percentages by Shinohara (National)	7.2	10.3	8.1	9.2	8.3	12.5

Although one does not always vary in the same direction as the other, in the 6 years' average (8.8%, 9.5%), both differ little.

We shall next go into the family budget survey on urban workers. We consult here four surveys. The first of them is a survey carried out from June 1921 to May 1922 by the *Kyōchōkai* (Cooperation Association) and shown in the *Hōkyū seikatsu-sha shokkō seikei chōsa hōkoku* (Survey Report of Livelihoods of Salaried and Manual Workers), published in March, 1915. The second is an investigation ranging from September, 1926 to August, 1927, shown in the Family Income and Expenditure Survey by the Cabinet Bureau of Statistics. The third and the fourth were made by the same bureau as the second, ranging from September, 1931 to August, 1932, and from September, 1935 to August, 1936.

(1) Survey of June, 1921–May, 1922
Consumption expenditures of 651 households of salaried and manual workers averaged ¥ 103.96 (taxes, duties, etc. not included). The annual value, ¥ 1,247.52, divided by the average number of household members, 4.17, gives the average annual per capita consumption expenditures, ¥ 299.

(2) Survey of September, 1926–August, 1927
The survey reported ¥ 101.42 in expenditures per household, of which the annual value, ¥ 1,217.04, divided by the average number of household members, 4.2, gives the average annual per capita consumption expenditures, ¥ 290.

(3) Survey of September, 1931–August, 1932
Consumption expenditures per household amounted to ¥ 75.73. The annual value, ¥ 908.76, divided by the average number of family members, 4.07, gives the average annual per capita consumption expenditures, ¥ 223.

(4) Survey of September, 1935–August, 1936
Expenditures amounted to ¥ 79.55 per household. The annual value, ¥ 954.60, divided by the average number of household members, 4.12, gives the average annual per capita consumption expenditures, ¥ 232.

All four surveys show larger values in the average annual per capita consumption expenditures (¥ 299, ¥ 290, ¥ 223, ¥ 232) than our estimates (¥ 216 [average of 1921, 1922], ¥ 207 [1927], ¥154 [1932], and ¥ 197 [1936]). However, if they are averaged with the lower expenditures of farmers, they

Table 20. CONSUMPTION EXPENDITURES BY THE FARM HOUSEHOLD ECONOMY SURVEY
(Annual Values)

Year	Consumption Expenditures			Weight			Weighted Average of Consumption Expenditures of the Whole Farmers (yen)	Per Capita Consumption Expenditures (A Family of 6 Supposed) (yen)
	Owner (yen)	Owner-tenant (yen)	Tenant (yen)	Owner	Owner-tenant	Tenant		
1922	1,176.450	997.406	719.990	30.56	41.10	28.34	973.502	162.24
1923	1,177.865	1,082.557	775.135	30.60	41.17	28.23	1,024.837	170.81
1924	1,339.117	1,261.941	806.123	30.63	41.40	27.97	1,158.089	193.01
1925	1,471.026	1,233.868	866.017	30.54	41.68	27.78	1,204.107	200.68
1926	1,324.951	1,094.518	909.663	30.64	41.92	27.44	1,114.399	185.73
1927	1,278.566	1,052.096	860.996	30.68	42.14	27.18	1,069.636	178.27
1928	1,246.203	1,001.781	829.404	30.79	42.33	26.88	1,086.126	181.02
1929	1,238.124	967.333	860.220	30.60	42.61	26.79	1,021.500	170.25
1930	897.181	749.528	650.327	30.55	42.63	26.82	768.031	128.00
1931	615.550	536.190	463.870	30.61	42.58	26.81	541.090	90.18
1932	617.370	548.310	480.100	30.53	42.64	26.83	546.830	91.14
1933	678.490	587.300	519.110	30.49	42.55	26.96	596.720	99.45
1934	664.110	661.500	553.690	30.41	42.46	27.13	633.050	105.51
1935	778.500	683.900	619.130	30.30	42.35	27.35	694.840	115.81
1936	824.460	760.010	667.370	30.36	42.25	27.39	754.200	125.70
1937	878.540	759.990	687.460	30.53	42.26	27.21	776.450	129.41
1938	924.260	856.960	760.660	30.17	43.06	26.77	851.490	141.91
1939	1,167.870	1,082.350	933.640	30.37	42.76	26.87	1,068.360	178.06
1940	1,385.640	1,363.250	1,128.350	30.53	42.42	27.05	1,306.550	217.76

Source: Same as Table 19.

Table 21. CONSUMPTION EXPENDITURES BY THE FAMILY INCOME AND EXPENDITURE SURVEY OF CABINET BUREAU OF STATISTICS (Average of Salaried and Manual Workers, Monthly Values) (percentage)

		1926.9–1927.8	1931.9–1932.8	1932.9–1933.8	1933.9–1934.8	1934.9–1935.8	1935.9–1936.8	1936.9–1937.8	1937.9–1938.8	1938.9–1939.8	1939.9–1940.8	1940.9–1941.8
Total Consumption	(in yen)	101.42	75.73	76.78	78.29	79.43	79.55	81.59	83.05	86.22	96.22	103.21
Expenditures		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Food & Beverages		37.21	34.33	34.58	34.40	36.49	37.91	37.85	39.11	39.93	43.15	43.53
Housing		16.96	18.09	18.07	17.56	17.03	16.95	16.30	16.35	15.55	13.95	13.67
Fuel & Lighting		4.59	4.72	4.68	4.91	4.92	5.02	4.84	5.19	5.44	5.36	5.68
Clothing		13.43	13.03	12.63	12.45	12.11	11.43	11.39	10.86	9.96	9.63	10.10
Health & Personal Care		6.36	7.67	7.48	7.32	6.94	6.89	7.10	7.10	7.47	7.02	7.16
Child Care		1.54	0.83	0.81	0.84	0.78	0.75	0.83	0.87	0.89	0.80	0.92
Education		1.42	1.26	1.33	1.47	1.64	1.70	1.84	1.87	1.97	1.90	1.79
Transportation Expenses		1.46	1.55	1.42	1.50	1.51	1.55	1.53	1.52	1.61	1.59	1.64
Communication & Carriage		0.30	0.38	0.36	0.37	0.36	0.36	0.38	0.35	0.32	0.29	0.27
Stationery		0.16	0.17	0.17	0.20	0.15	0.15	0.28	0.12	0.13	0.14	0.35
Social Expenses		7.61	8.98	9.10	9.03	8.38	8.13	8.40	8.32	8.16	7.89	7.47
Gifts		5.65	5.74	5.83	5.72	5.35	5.09	5.34	5.44	5.32	5.05	4.80
Others		1.96	3.24	3.27	3.31	3.03	3.04	3.05	2.88	2.84	2.84	2.67
Culture & Recreation		4.11	5.20	5.40	5.68	5.38	5.18	5.18	4.94	4.85	4.57	4.49
Travelling Expenses		1.06	1.08	1.12	1.11	1.06	0.97	0.99	0.85	0.99	1.08	0.91
Wages for Employees		0.19										
Others		2.90	2.54	2.64	2.94	3.05	2.80	2.87	2.35	2.53	2.40	1.83
Expenses of Ceremonial Occasions			0.71	0.98	1.01	1.00	0.85	0.97	0.63	0.72	0.86	0.48
Others			1.82	1.67	1.93	2.05	1.95	1.90	1.72	1.81	1.54	1.35
Inappropriate Entry		0.70	0.17	0.21	0.22	0.20	0.21	0.22	0.20	0.20	0.23	0.19

Table 22. COMPARISONS IN PER CAPITA ANNUAL VALUES OF CONSUMPTION EXPENDITURES (in yen)

Year	Farm Household Economy Survey (A Family of 6 Supposed)	Family Income and Expenditure Survey of Cabinet Bureau of Statistics	Shinohara's Estimates (Nation-wide Average)
1922	162.24	—	212.83
1923	170.81	—	214.26
1924	193.01	—	217.38
1925	200.68	—	224.34
1926	185.73	—	214.04
1927	178.27	289.80	207.23
1928	181.02	—	205.32
1929	170.25	—	195.43
1930	128.00	—	177.31
1931	90.18	—	157.21
1932	91.14	223.32	154.11
1933	99.45	223.68	167.88
1934	105.51	229.20	184.88
1935	115.81	231.96	190.52
1936	125.70	231.72	197.18
1937	129.41	237.60	222.49
1938	141.91	241.92	247.21
1939	178.06	252.36	252.84
1940	217.76	280.92	285.11

may approach our estimates. For example, our estimate (¥ 210) lies between ¥ 156, the annual per capita expenditures of farmers for 1920, and though a year later, ¥ 299, annual per capita expenditures of urban residents above for 1921.

It is not very significant to make detailed weighted averages concerning farmers' and urban workers' per capita expenditures, for there may be deviations in the objectives surveyed and biases in the samples. We must satisfy ourselves with the result of general checks in which our nation-wide estimates of consumption expenditures do not diverge greatly from the outcomes of family budget surveys.

Next we shall check our estimates by family budget surveys on workers as well as on farmers from the Taishō era to World War II. Table 20 shows changes in annual per capita values of farmers' consumption expenditures computed from annual household values (classified by owners, owner-tenants and tenants) of the Farm Household Economy Survey, the number of households in each class being weighted and each household being supposed to consist of 6 members. Although violent changes are noticed in the table and it is not impossible to think that the farmers under survey may have undergone considerable changes in their scale of farm operation during the period, we shall tentatively accept the results as shown.

For salaried and manual workers we shall again consult the Family In-

Table 23. PERCENTAGE COMPOSITIONS OF FARMER'S EXPENDITURES BY THE FARM HOUSEHOLD ECONOMY SURVEY

(percentage)

Year	Food & Beverages	Clothing	Housing	Fuel & Lighting	Medical & Personal Care	Social Expenses	Education & Recreation	Expenses for Ceremonial Occasions	Others	Total
1922	53.2	10.1	5.7	4.8	4.2	6.7	3.4	6.9	5.0	100.0
1923	51.6	10.3	5.8	5.0	4.1	6.9	4.0	6.4	5.9	100.0
1924	50.3	10.0	5.6	6.3	4.4	7.1	4.0	6.3	6.0	100.0
1925	48.6	9.6	5.7	5.7	5.4	6.7	4.0	8.2	6.1	100.0
1926	50.1	9.9	5.5	6.1	4.3	7.2	4.1	6.0	6.8	100.0
1927	50.7	8.9	5.5	6.9	5.4	7.6	3.4	5.8	5.8	100.0
1928	47.9	9.4	5.6	6.8	4.7	7.5	4.4	6.8	6.9	100.0
1929	46.7	8.7	5.5	6.1	5.4	7.9	3.9	6.4	9.4	100.0
1930	49.4	7.4	5.1	6.4	5.1	7.7	4.1	7.1	7.7	100.0
1931	48.4	8.0	6.4	6.1	5.7	8.6	3.5	6.8	6.5	100.0
1932	51.7	8.2	6.4	5.8	4.6	8.4	3.6	4.6	6.7	100.0
1933	49.4	9.4	6.2	5.7	5.4	8.4	3.8	5.8	5.9	100.0
1934	51.2	8.6	5.9	5.1	6.0	7.9	3.5	6.4	5.4	100.0
1935	51.8	9.4	6.2	4.8	4.3	7.7	3.6	7.1	5.1	100.0
1936	51.3	9.7	6.5	4.5	4.7	8.1	3.6	6.7	4.9	100.0
1937	52.8	9.2	5.7	4.4	5.3	8.4	3.6	5.7	4.9	100.0
1938	52.0	10.1	5.6	4.8	5.4	8.1	4.0	5.0	5.0	100.0
1939	50.6	11.3	5.2	4.6	5.1	8.3	4.0	6.3	4.6	100.0
1940	49.6	11.6	5.9	4.6	5.1	8.0	4.5	5.7	5.0	100.0

Note: Computed by the family-number-weighted average of the classified percentage compositions by owners, owner-tenants, and tenants.

come and Expenditure Survey by the Cabinet Bureau of Statistics (Table 21). We shall compute annual per capita expenditures by dividing the annual totals of given monthly expenditures by the average number of household members for the year. These are shown in Table 22 for comparison with the results of the Farm Household Economy Survey and our estimates. At first sight our estimates seem to be consistent on the whole with the other surveys for total sums of per capita consumption expenditures, since they stand between the results of the farmer's survey and those of workers as far as the period up to 1936 is concerned. However, from 1937 on our results become similar to those of the Cabinet Bureau of Statistics and from 1938 on our estimates are a bit higher than the official estimates. If the results of the Family Income and Expenditure Survey with regard to workers were undeniably correct, our estimates would be wrong for the World War II period. But, as I fully explained before, the survey extremely underestimated the increase rate of family consumption expenditures of workers' households during the period concerned. As is shown in Table 22, expenditures of workers rose by only 25.7% from 1932 to 1940, while expenditures of farmers achieved an increase of 2.39 times. As this is obviously impossible, the Family Income and Expenditure Survey on workers cannot be used as a criterion for the evaluation of our estimates.

Table 23 gives the percentage composition of each expenditure, based on the Farm Household Economy Survey for 1922–1940. The number of households of owners, owner-tenants and tenants was used as a weight, in deriving the proportion of each expenditure for "all" farmers. In the table the percentage of food expenditures (including tobacco and alcoholic drinks) is approximately 50%, which is close to our percentages shown in Table 2. Although the percentage of food expenditures in the Farm Household Economy Survey is in favour of our estimates, that of workers' households, which remains between 34.33–43.53% as seen in Table 21, is far less than our estimates. However, if such food expenditures as are involved in expenditures for child-care, gifts, travelling, and ceremonial purposes are included in the total, total food expenditures are surmised to be raised to 39–48%. Moreover, as the number of salaried and manual workers increased in the process of industrialization, some portion of food expenditures may have dropped off the survey due to husbands' dining out, most frequently in cities. Further, the purchases of food and beverages on company expense accounts may have tended to increase relatively from about 1920, although I have no appropriate data to go upon. We should remember that our estimates through the commodity flow and other methods cover food expenditures on company expense accounts and some other expenses likely to be omitted from the surveys. Above all, as analyses for the post-war period have revealed, tobacco and alcoholic drinks have too often not appeared enough on urban family budget surveys. Another no less important issue is that the Farm Household Economy Survey carried out before the war is generally said to have chosen as its objectives farm households with a relatively higher income than the average. If so, the percentages shown in Table 23 may be concluded to stand rather lower than

the average of all farmers (I am indebted to Professor Kazushi Ohkawa for this suggestion). The question concerning this point is how to plug the gap of the Engel's Coefficient between our estimates and the results of the Family Income and Expenditure Survey by the Cabinet Bureau of Statistics. In any case, the appearance of the disproportionately higher food expenditure percentages of our estimates in comparison with the outcome of the urban family income and expenditure survey do not necessarily supply grounds for argument against us. In the percentage of clothing expenditures there is no great difference, but instead a strange coincidence among our estimates, the family budget and expenditure surveys of urban workers households and the farm household economy survey. However, we should mention the characteristic finding that the percentages of clothing expenditures in our estimates change more greatly than they are believed to have done in fact. Clothing expenditures, of which the annual figures and percentages are omitted in this paper, course along a gentle slope from 9.7% to 13.7% during 1930–1936, but in 1937 and 1938 they increase suddenly to 15.9%, 17.7%, and then in 1939 and 1940 show a precipitous fall to 10.7% and 11.0%. This fact is conjectured to be due to the procedure in which we omitted an adjustment of stock changes in production and distribution processes when we estimated clothing expenditures through the commodity flow method. Estimated expenditures of clothing are subject to violent business fluctuations and indicate noticeably sharp drops during the Matsukata Deflation, after World War I and during World War II. It is not impossible to correct this point, for instance, by smoothing the basic data by three-year moving averages, though we did not attempt to do so in making these estimates.

As is made clear above, our estimated results can be said to be consistent on the whole with the family budget surveys carried out in the past. If we bear in mind the nature of the family budget surveys as well as their limitations and take into consideration the characteristics of our estimates, it will not be very difficult for us to fill in the gap between them.