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Volume Title: Trends in Employment in the Service Industries

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Volume Publisher: Princeton University Press

Volume ISBN: 0-87014-058-2

Volume URL: <http://www.nber.org/books/stig56-1>

Publication Date: 1956

Chapter Title: A Historical Preface

Chapter Author: George J. Stigler

Chapter URL: <http://www.nber.org/chapters/c2822>

Chapter pages in book: (p. 14 - 46)

CHAPTER 2

A HISTORICAL PREFACE

WHEN we seek to explain the trends in employment in various service industries, we shall repeatedly encounter a particular set of influential economic developments. They can all be subsumed under the traditional headings of the theory of consumer demand: income, prices, and tastes. Normally the economist places primary weight on income and prices, and hopes that tastes have been reasonably stable.

In the study of long-run trends in consumption, however, this neglect of tastes is not desirable; and it is not necessary. Many influences upon "tastes," such as the characteristics of the population, are measurable and can profitably be brought to bear on the analysis of trends in consumption. The present chapter summarizes certain basic changes in "tastes," and also in income. These changes in tastes will be familiar to all readers, but it seems desirable to set them forth with some detail here rather than burden the discussions of individual industries which they have influenced.

1. Population

In 1950 our population was approximately five times as large as in 1860 (Chart 1). This fact alone suffices to explain the increase in the absolute number of workers in most broad industrial groups, but it does not aid us in explaining the differential movements in which we are especially interested.

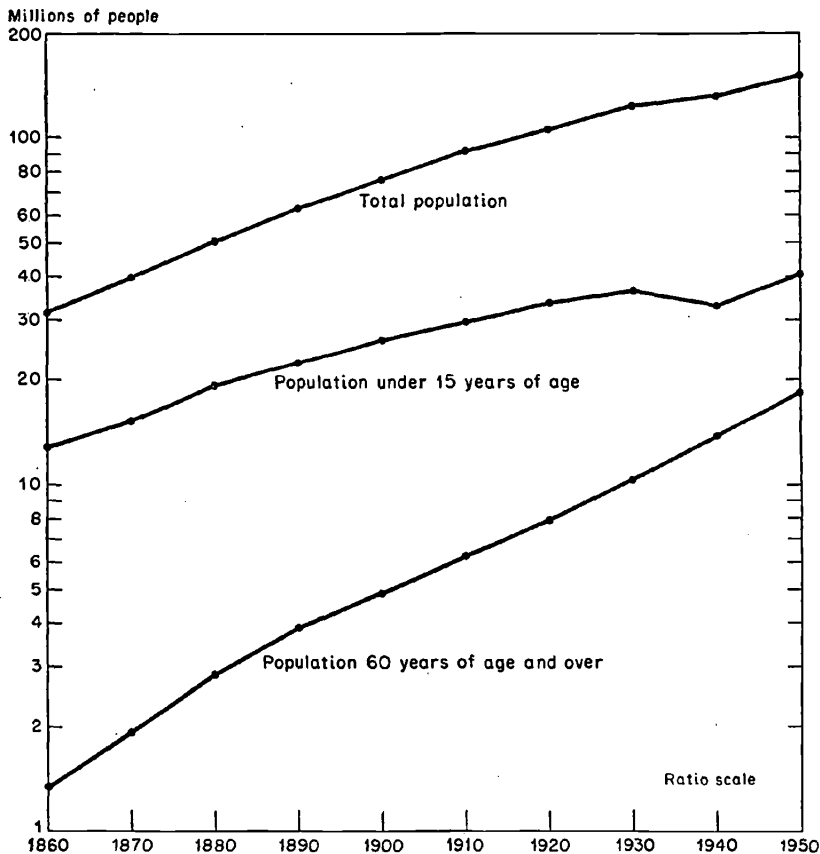
The population of 1860 was essentially agricultural: 4 out of 5 persons lived in rural areas, and usually on farms. In 1950 only 2 out of 5 persons lived in rural areas, and less than 1 of these 2 lived on a farm (Table 8). The urbanization has taken place in almost a cyclical pattern: decades of rapid and of slow decline in the percentage of people in rural areas have alternated regularly except for the decade 1910 to 1920. The decades characterized by exceptionally long and severe depressions—the 1870's, the 1890's, and the 1930's—are those in which urbanization progressed most slowly.

The percentage of the population in rural areas has been falling at a slower average rate in recent decades. This retardation is to some extent inevitable in the arithmetic: a decline of roughly 40 percentage points from 1860 to 1950, if duplicated in the ninety

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CHART 1

Population of the United States, 1860-1950, Total, under 15 Years of Age, and 60 Years of Age and Over



Source: *Statistical Abstract of the United States*, Dept. of Commerce, 1953, Tables 2 and 21, and *Historical Statistics of the United States, 1789-1945*, Dept. of Commerce, 1949, Series B Tables 81-144.

years to 2040, would eliminate the farm and rural nonfarm population of the country. But it is due also to the relative increase of the rural nonfarm population: this part of the population has gained ground relative to the total population in the last forty years.

The urban population of 1860 lived usually in cities well under 100,000. Another striking development has been the relative growth of the largest cities. By 1920 half the urban population was in cities over 100,000. Here again retardation is evident; and

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TABLE 8

Percentage Distribution of Rural and Urban Population, 1860-1950

	RURAL		URBAN, BY COMMUNITY SIZE		
	All	Farm	2,500- 10,000	10,000- 100,000	100,000 and over
1860	80.23	n.a.	5.00	6.38	8.39
1870	74.32	n.a.	6.13	8.84	10.71
1880	71.83	n.a.	6.65	9.14	12.38
1890	64.88	n.a.	7.40	12.31	15.41
1900	60.31	n.a.	8.03	12.96	18.70
1910	54.34	34.91	8.64	14.95	22.07
1920	48.77	30.14	8.85	16.44	25.95
1930	43.84	24.87	8.64	17.93	29.59
1940	43.48	23.20	8.89	18.78	28.85
1950	40.99 ^a	16.63 ^a	8.92	20.60	29.49

^a Old urban definition.

n.a. = not available.

Source: *All Rural and Urban: Census of Population, 1940*, Bureau of the Census, Vol. II, Part 1, Table 5; *Historical Statistics of the United States, 1789-1945*, Dept. of Commerce, 1949, Series B Tables 145-159; and *Census of Population, 1950*, Vol. II, Part 1, Tables 5B and 58. *Farm: Farm Population*, Bureau of the Census, Series Census-BAE, No. 16, March 9, 1953, Table 1.

in England and Wales, whose earlier industrialization may give their experience some predictive value, an actual reversal has taken place (Chart 2.). Although our largest cities have not increased their share of the population since 1930, their satellite cities and suburbs have continued to grow—although at a decreasing rate. More than half the population lived in metropolitan areas in 1950, whereas only one-fourth lived in (differently defined) metropolitan districts in 1900.¹

The declining rate of growth of total population is evident in Chart 1. Its necessary corollary has been the aging of the population (Table 9). In 1860, children under 15 were two-fifths of the population, and they were almost ten times as numerous as people of 60 or more years. By 1950, children of this age were only one-fourth of the population, and they were only a little more than twice as numerous as the population of 60 or more.

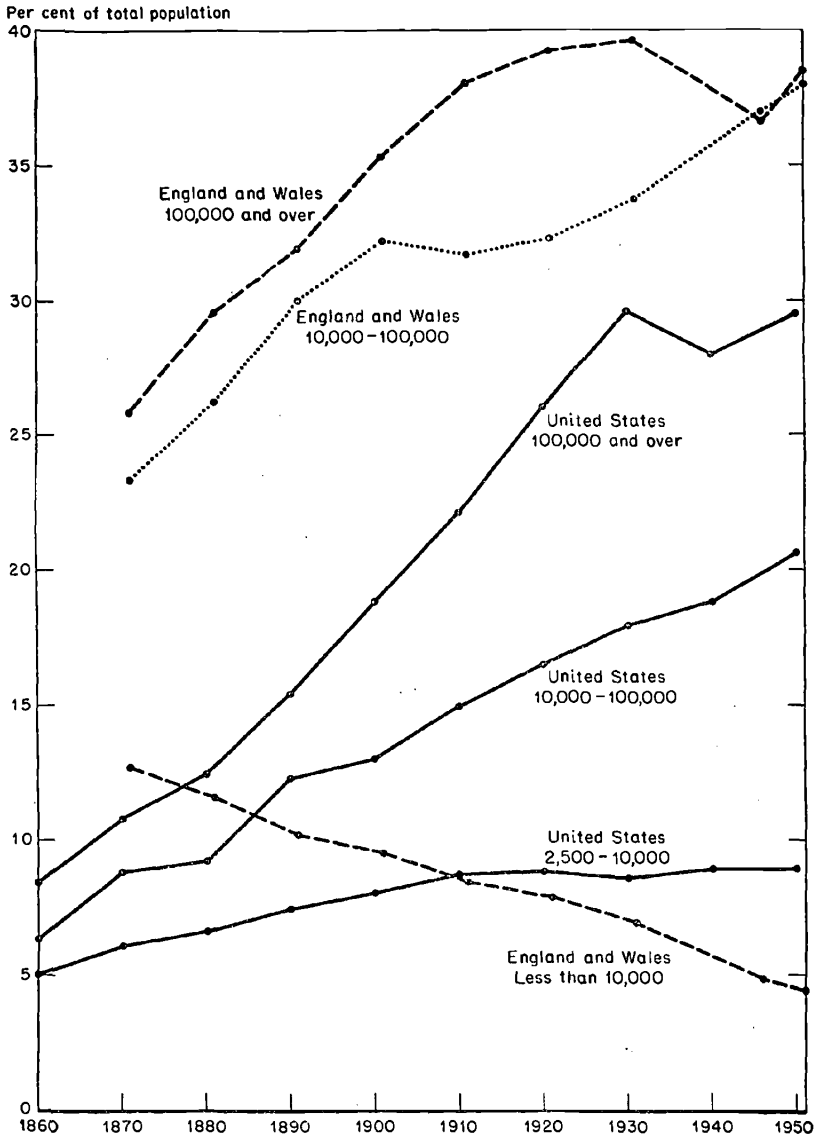
The decline in the relative number of children has important effects upon consumption and employment patterns that we shall

¹ See Warren S. Thompson, *The Growth of Metropolitan Districts in the United States: 1900-1940*, Bureau of the Census, 1947, and the 1950 Census.

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CHART 2

Percentage of Population in Three Community Sizes, United States, 1860-1950, England and Wales, 1871-1951



Source: *Census of Population, 1950*, Bureau of the Census, Vol. II, Part 1, Table 5B, pp. 1-7; *Census of England and Wales, 1871-1931*, London, General Register Office, H.M.S.; and *Census of England and Wales, 1951, Preliminary Report*, Table G.

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TABLE 9

Population Characteristics, 1860-1950

	PERCENTAGE OF POPULATION		AVERAGE FAMILY SIZE ^a	PERCENTAGE OF MARRIED WOMEN IN THE LABOR FORCE
	<i>Under 15</i> (1)	<i>60 and over</i> (2)		
1860	40.5	4.3	5.28	n.a.
1870	37.9	4.8	5.09	n.a.
1880	38.1	5.6	5.04	n.a.
1890	35.5	6.1	4.93	4.6
1900	34.4	6.5	4.69	5.6
1910	32.1	6.8	4.54	10.7
1920	31.8	7.5	4.34	9.0
1930	29.4	8.6	4.10	11.7
1940	25.0	10.5	3.65	16.7
1950	26.9	12.2	3.31	21.6

^a Families include institutional groups and quasi households.

n.a. = not available.

Column	Source
1, 2	1860-1870: <i>Historical Statistics of the United States, 1789-1945</i> , Dept. of Commerce, 1949, Series B Tables 1-12 and 81-144. 1880-1950: <i>Census of Population, 1950</i> , Bureau of the Census, Vol. II, Part 1, Table 39.
3	1860-1890: <i>Historical Statistics of the United States, 1789-1945</i> , Series B Tables 171-181. 1900-1930: <i>Census of Population, 1930</i> , Vol. VI, Table 14, p. 10. 1940: <i>Census of Housing, 1940</i> , Vol. II, Part I, Table III, and <i>Census of Population, 1940, Population and Housing, Families</i> , Table 19, p. 52. 1950: <i>Census of Population, 1950</i> , Vol. II, Part 1, Table 47.
4	1890-1940: <i>Historical Statistics of the United States, 1789-1945</i> , Series D Tables 1-10. 1950: <i>Census of Population, 1950</i> , Vol. I, Part 1, Tables 45 and 121.

notice later; the direct effect upon income is worth commenting upon. An economy in which the percentage of children falls from 40 to 25 will, other things (such as average income per worker) remaining constant, experience a rise of roughly 25 per cent in per capita real income.

Actually the effect upon income of the decline in the relative number of children will probably be larger, in part because of the increase in the number of married women who are able and willing to enter the labor force (Table 9). Such an increase has taken place: in 1890, only 1 married woman in 20 was in the labor force; by 1950, 1 in 5 was in the labor force. The average family size had fallen to 3.3 persons by 1950, and this of course means that a large number of families—about 25 per cent of those in which the hus-

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band was less than 44 years of age, for example—had no children under 18 years of age.

One final development in our population deserves mention: the decline of immigration. Gross immigration reached 1.2 million per year at its peak (1907 and 1914), fell sharply during World War I, recovered substantially in the early 1920's, and then fell to a low level. Net immigration amounted to one-fourth to one-third of the increase in our population from 1870 to 1920, and to more than one-sixth in the 1920's, and thereafter was unimportant (Table 10). The decline in immigration was an important cause

TABLE 10
Net Immigration and Population Growth, 1870-1950

<i>Decade</i>	<i>Net Immigration^a</i> (1)	<i>Increase in Population</i> (2)	<i>Immigration as Percentage of Population Increase</i> (3)
1870-1880	2,530,000	10,337,334	24.5
1880-1890	4,273,000	12,791,931	33.4
1890-1900	3,239,000	13,046,861	24.8
1900-1910	5,558,000	15,977,691	34.8
1910-1920	3,467,000	13,738,354	25.2
1920-1930	3,062,133	16,611,000	18.4
1930-1940	68,693	9,045,000	.8
1940-1950	878,640	19,555,000	4.5

^a Before 1907 no record was kept of emigration, so the earlier years have been estimated from population censuses (see William S. Rossiter, *Increase of Population in the United States, 1910-1920*, Bureau of the Census, Census Monograph I, 1922, pp. 199-204).

Column

Source

- 1 1870-1920: Rossiter, *op. cit.*, p. 204. Figures correspond to census dates. 1920-1945: *Historical Statistics of the United States, 1789-1945*, Dept. of Commerce, 1949, Series B Tables 304-330 and Series V Tables 350-353. 1945-1950: *Statistical Abstract of the United States*, Bureau of the Census, 1952, Tables 104 and 105. Decade estimates derived from these tables cover fiscal year periods.
- 2 *Historical Statistics of the United States, 1789-1945*, Series B Tables 1-12. Population as of census dates. 1920-1950: *Statistical Abstract of the United States*, 1953, Table 7. Population as of fiscal years.

of the decline in the rate of growth of population. It was one source of the increasing homogeneity of American consumers.

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2. *The Progress of Communication*

The great advances in communication since the Civil War have transformed the economy from one of widespread and loosely coordinated parts into a much more compact, interdependent, and homogeneous system. For we include in communication the transportation not only of men and commodities but also of ideas.

Consider passenger travel. In 1875 the fastest train required 34 hours to go from New York to Chicago, and 126 from Chicago to San Francisco. In 1950 the corresponding times were 16 hours and 49 hours, and by air the times were 3 hours and 12 hours respectively. The speed of travel by train had thus more than doubled, and by air one could go ten times as fast as in 1875.²

The money cost of travel rose for the trip from New York to Chicago—the coach fare was \$24.75 in 1875 and \$35.31 in 1950 (and air travel was \$50.72). The fare from Chicago to San Francisco also rose—first class fares were \$115.95 in 1875, and \$123.21 in 1950 (and air travel was \$130.81).³ But if we take account of the rise of money income, the ability to travel was enormously increased. Money income per capita rose about tenfold over this period (see below), so relative to income the cost of travel (judged by these examples) fell by nine-tenths.

The cost of transporting goods probably has fallen even more than the cost of transporting people. The variety of goods and the multiplicity of movements is so great that no long-term index of freight rates has been compiled for railroads, let alone for all forms of transportation. The final outcome of the reductions in rates and of the development of new methods of transport such as trucking, however, is reflected in the geographical structure of prices. The vast reduction in the dispersion of average December prices of wheat between 1866 and 1950 is evident from the frequency histograms in Chart 3. This reduction in dispersion appears to have been general, and to have come about chiefly since 1900.⁴

² For the early period, see *Travellers' Official Railway Guide for the United States and Canada*, W. F. Allen, editor, General Ticket Agents' Association, July 1875.

³ The early fares are from the *Travellers' Official Railway Guide* of 1875, as cited; the later fares include federal tax of 15 per cent.

⁴ The coefficients of variation of average farm prices by states were as follows:

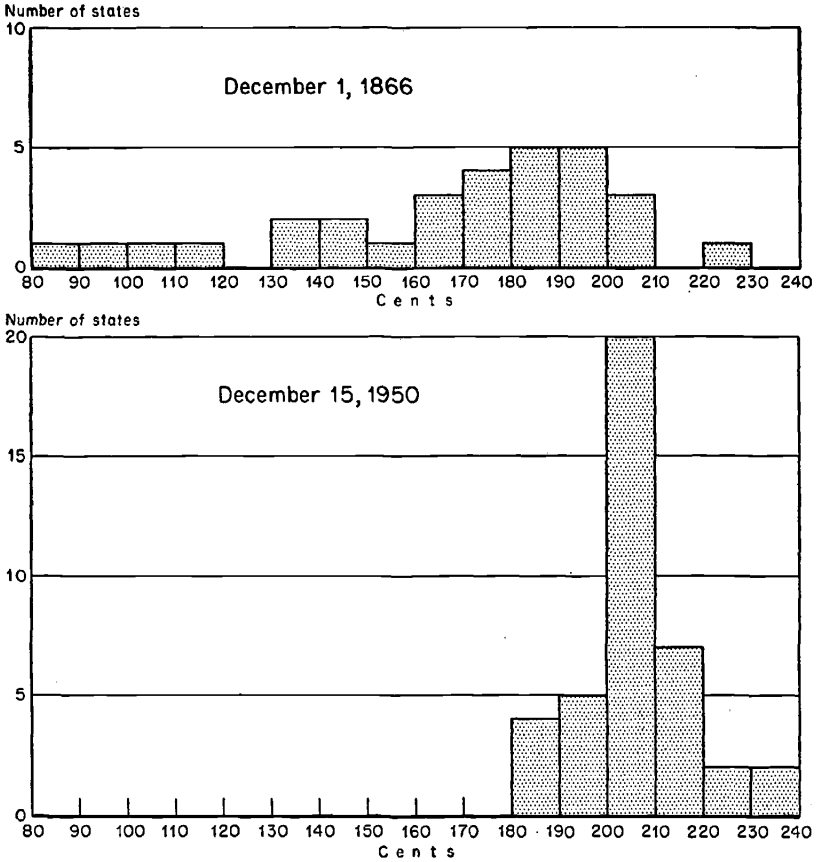
Year	Wheat	Potatoes
1866	20.8	36.0
1900	18.4	35.1
1950	5.5	23.6

Source: *Wheat Crops of the United States, 1866-1906*, Bull. 57, 1907,

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CHART 3

The Distribution of Wheat Prices by State, 1866 and 1950
(average farm prices per bushel)



Source: *Wheat Crops of the United States, 1866-1906*, Dept. of Agriculture, Bureau of Statistics, Bull. 57, 1907, Table 1, and *Agricultural Prices*, Bureau of Agricultural Economics, Agricultural Crop Reporting Board, December 1950, p. 8.

The improvements in the transportation of men and goods were surpassed by those in the transportation of ideas. These were reflected in the postal service, and the spread of telegraphy and the telephone eliminated even the delays that once temporarily sheltered

Table I, and *Potato Crops of the United States, 1866-1906*, Bull. 62, 1908, Table I; *Yearbook of the Department of Agriculture*, 1901, pp. 713, 743; *Agricultural Prices*, December 1950, p. 8—all Dept. of Agriculture. The number of states whose wheat prices were reported was 30 in 1866, 44 in 1900, and 40 in 1950.

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a man from other men and events. Without these developments it would have been impossible for large national organizations, economic or political, to pursue unified policies.

The improved transmission of ideas between individuals, however, has been less important in many ways than the proliferation of mass communication media. Even 100 years ago our country had an international reputation for the number of newspapers we read, and the habit has grown. In 1860 our newspapers and periodicals had a circulation of .44 copy per inhabitant per issue; by 1947 this had grown to 3.50 copies, and the frequency of issue had increased. Some 90 million radio sets had been installed over the three decades up to 1950, and 35 million television sets now threaten to make the deeds of the heroic cowboy as familiar as the troubles of Sylvania's Several Spouses.

The rise of the mass communication media is the shadow of the rise of modern advertising. Judged by advertising copy, advertising has made great strides forward in pictorial value and in persuasiveness.⁵ Judged by expenditures, the rise has been even more striking (see Chart 4): the advertising receipts of newspapers and periodicals were \$.78 per capita of population in 1880 and \$7.76 in 1947. Advertising in the 1890's aided in the demonstration that Americans would buy millions of an expensive luxury (the bicycle), and in 1898 Uneeda Biscuits left the unadvertisable cracker box for the packaged container, with results we shall notice in later chapters.

Alfred Marshall believed that the homogeneity of the American demand for manufactured goods was a large force in the rise of the great mass production industries: "Even those race differences, which have become almost a dominant factor in American life, lessen this homogeneity but little. . . . Speaking generally all the various races in the country, widely as they differ from one another in character and aptitude, are yet alike in yielding to the dominant spirit of the strong mixed race among whom they have settled."⁶ Marshall's view has eluded empirical test, and as of 1900 may have had little appeal as an explanation of the progress of standardization in this country compared with European nations. But now the homogeneity has become much greater. We have cited in this chapter some of the forces: the dwindling of immigration with the

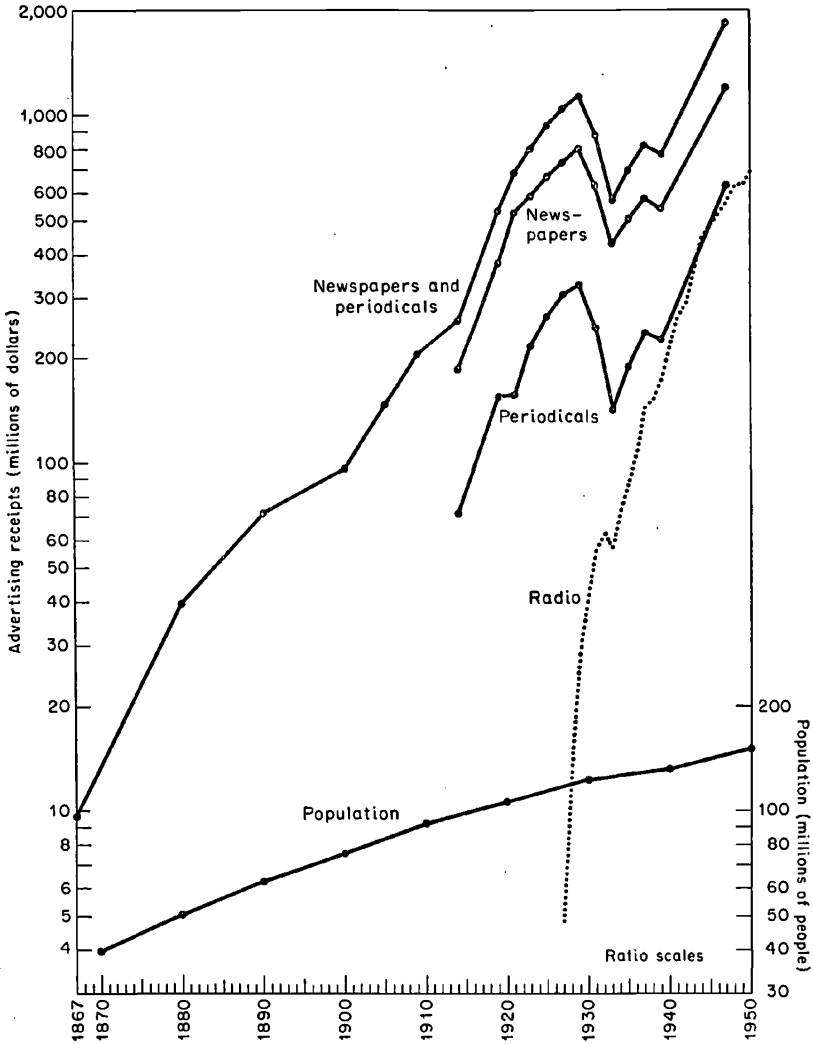
⁵ See Frank Presbrey, *The History and Development of Advertising*, Doubleday, 1929.

⁶ Alfred Marshall, *Industry and Trade*, London, Macmillan, 1919, p. 147.

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CHART 4

Advertising Receipts of Newspapers, Periodicals and Radio, and Population Growth, 1867-1950



Source: Population: 1870-1940: *Historical Statistics of the United States, 1789-1945*, Dept. of Commerce, 1949. 1940-1950: *Statistical Abstract of the United States*, Dept. of Commerce, 1953.

Newspapers and Periodicals: 1867: Frank Presbrey, *The History and Development of Advertising*, Doubleday, 1929. 1880-1950: *Censuses of Manufactures*, Bureau of the Census.

Radio: *Broadcasting Year Book*, Broadcasting, 1951, pp. 11-12.

consequent decline of foreign language communities; the urbanization of the population; and most important, I think, the enormous growth of the mass communication industries. In 1860 the typical adult (who lived on a farm) lived an almost completely private life: aside from his religious activity and reading, he spent his time and formed his thoughts alone or in small, personal groups. Today he devotes several hours each day, and she devotes even more, to participating with millions of others in reading, listening to, and viewing the products of the mass communication industries.

3. *Income*

The economist's summary of the skill with which resources are used, the mobility and discipline and competence of the labor force, the thrift of a people and the success of its explorers and inventors, is a single statistic: real income. For the American economy it soared from an annual figure of \$9.3 billion (in 1929 prices) in the decade 1869-1878 to one of \$154.6 billion (in 1929 prices) in the decade 1944-1953 (see Table 11). The annual per capita income rose from \$215 in the former decade to \$1,043 in the latter decade (both in 1929 prices).

These figures, the end results of innumerable calculations and estimates, mean little to a person who was not alive and observant in 1875 and has some doubts as to his whereabouts in 2025. They may take on more significance if that person estimates what he would eat and wear if his income were today one-fifth of what it actually is, or, should this prove too gruesome, if he contemplates the effects on his living standards of a fivefold increase in income (before taxes).

This enormous rise in real income naturally plays an important role in the trends of employment in the service industries, and, for that matter, in explanations of the changes in composition of output and allocation of resources generally. Obvious as the importance of income in consumption may be, it is singularly elusive when one seeks a quantitative measure of its effects.

We possess much information on the budgets of families of widely different incomes, and we should like to employ this information to explain long-term trends of expenditures and employment. The richer community differs in its spending from the poorer community, we hope, in the same general respects in which a richer family differs from a poorer family at any one time. Should this prove to be so, we can predict that as a community's income rises,

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TABLE 11

Average Annual National Income, 1869-1953

DECADE	IN CURRENT PRICES (millions)	IN 1929 PRICES	
		Total (millions)	Per Capita
1869-1878	\$6,489	\$9,340	\$215
1874-1883	8,312	13,601	278
1879-1888	9,941	17,875	326
1884-1893	10,953	21,042	344
1889-1898	11,671	24,170	357
1894-1903	14,350	29,751	401
1899-1908	19,740	37,324	458
1904-1913	26,273	44,992	502
1909-1918	36,341	50,560	517
1914-1923	55,324	57,269	546
1919-1928	72,160	69,047	612
1924-1933	70,139	73,265	607
1929-1938	61,274	72,045	572
1934-1943	87,564	96,000	734
1939-1948	153,349	131,137	951
1944-1953	230,235	154,608	1,043

Source: *National Income: 1869-1938*: Simon Kuznets, *National Product since 1869*, National Bureau of Economic Research, 1946, Tables II-16 and II-17, pp. 119-120; *1939-1953: National Income Supplement, 1951, Survey of Current Business*, Dept. of Commerce, Tables A and 1; "National Income and Product in 1953," *Survey of Current Business*, February 1954, Tables 1 and 4; *Statistical Abstract of the United States*, Bureau of the Census, 1953, Table 7; and *Current Population Reports*, Series P-25, No. 88. *Income in 1929 Prices*: National income figures in 1929 prices for the decades 1929-1938 to 1944-1953 were obtained by splicing estimates of national net product in 1939 prices for the period 1929-1938, derived from Dept. of Commerce data, to Kuznets' national income estimates in 1929 prices (Kuznets, *op. cit.*).

it will spend relatively more on medical services and recreation and relatively less on food and housing.

Several experiments were made in the use of budgetary data to explain long-run changes in consumption. These experiments were clearly failures. Because this approach is nevertheless being widely used at the present time, these experiments are reported in detail in a technical note to this chapter. The experiments do not demonstrate that income is unimportant—although income may not wield such power over relative prices as much recent economic thinking assumes—but they do indicate that budgetary information must be used in a degree of complexity that deprives this approach of most of its attractions. As a result, we shall make little use of the budget-

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ary analyses of spending when we seek to explain employment trends in the service industries.

Technical Appendix: Budget Data and Consumption Trends

No one will question that there are some general similarities between the variation of consumption with income as revealed by budget studies and the variation as revealed by changes in income over time. The budget studies indicate that families with larger incomes spend a larger fraction of their incomes upon medical services and a smaller fraction on food than families with smaller incomes, and generally a comparable rule holds for a nation as its income grows. Nor will many question that sometimes vast discrepancies also arise: families with larger incomes hire more servants; in modern times, as a nation's income has grown it has generally hired fewer servants. The question is whether the agreement is sufficiently close to make the budget patterns a useful basis for explaining long-run consumption trends. We present three experiments. They are reported in some detail because of the wide use of "cross-sectional" data to predict trends.

1. EMPLOYMENT IN SERVICE INDUSTRIES

Our primary interest is in the service industries, and the correspondence between these industries and the categories of consumer expenditure is not easy to summarize. In a few cases, such as domestic service, the correspondence is complete: all of the consumer expenditures go to the employees in this field. In some, like physicians' services, the correspondence is tolerably close, although some proportion of consumer expenditures go for things (like offices and equipment) which are not produced by service industries, and some physicians work for businesses. In some of the most important, however, including wholesale and retail trade and government services, the correspondence is very distant, for either the contribution of the service industries is only one part of the price (as in food retailing) or the services are paid for by taxes. We shall summarize here only those expenditure patterns that pertain fairly directly to employment in the service industries.

The classes of consumer expenditures composed chiefly of service expenditures are listed in Table 12, and the expenditure patterns of urban families in 1919, 1935-1936, and 1941 are presented in Charts 5 to 16. All the data are presented in current dollars because we have no suitable price indexes with which to

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TABLE 12

Income Elasticities of Urban Families, 1919, 1935-1936, and 1941

<i>Expenditure Category</i>	1919	1935-1936	1941
Personal care			
Laundry sent out	1.46	1.30	1.01
Barber and beauty shops	.76	.84	.96
Health			
Physicians and oculists	.71	.82	.70
Dentists	1.53	1.24	1.12
Other medical care	1.07	.93	.72
Amusement and recreation			
Dues, social and recreational	1.29	n.a.	1.84
Movies	1.86	.97	.92
Other	2.72	1.39	1.27
Contributions and gifts			
Church	1.24	1.24	1.10
Other	1.61	1.61	1.23
Other			
Life insurance	.79	n.a.	1.24
School: tuition, books, etc.	1.59	1.63	1.64
Servants	2.15	2.26	1.82
Food outside home	n.a.	1.43	1.22
Auto repairs	n.a.	n.a.	1.13

n.a. = not available.

Source: 1919: *Cost of Living in the United States*, Bureau of Labor Statistics, Bull. 357, 1924. 1935-1936: *Family Expenditures in the United States*, National Resources Planning Board, 1941. 1941: *Family Spending and Saving in Wartime*, Bureau of Labor Statistics, Bull. 822, 1945.

deflate the individual expenditure categories.⁷ Since prices were relatively high in 1919, the curves comparable with other years should probably be shifted both to the left and downward.

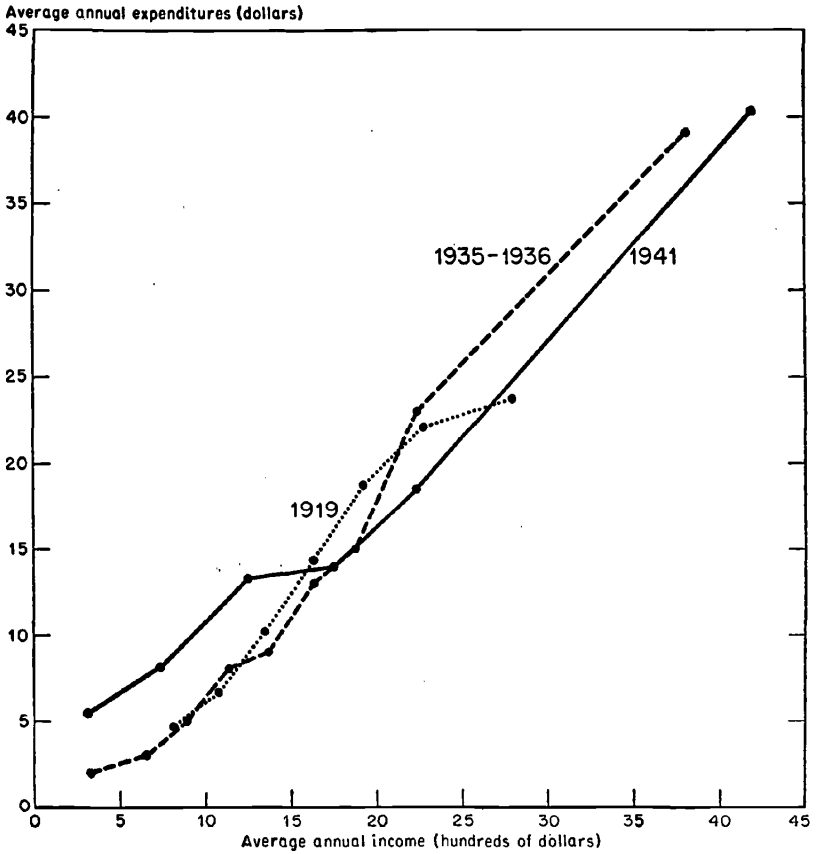
The one outstanding characteristic common to all the "income curves" presented here is their positive slope—without important exception the families spent more on each category as income rose. This characteristic is measured more precisely by the average income elasticities—the percentage by which expenditures on a category would rise if each family's income rose by 1 per cent (Table 12). Most of these elasticities exceed unity, so expenditures on services rose at a faster relative rate than income. On the other hand, the elasticities were generally (9 out of 13 times) smaller in 1941 than in 1919 and the increases were on the average smaller than the decreases in numerical value. So the income elasticities for these services were high but decreasing through time.

⁷ The index of consumer prices was 123.8 in 1919, 98.6 in 1935-1936, and 105.2 in 1941; average income in current dollars was \$1,513 in 1919, \$1,742 in 1935-1936, and \$2,121 in 1941.

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CHART 5

Expenditures of Urban Families on Laundry Sent Out, by Income Class,
1919, 1935-1936, 1941
(current dollars)

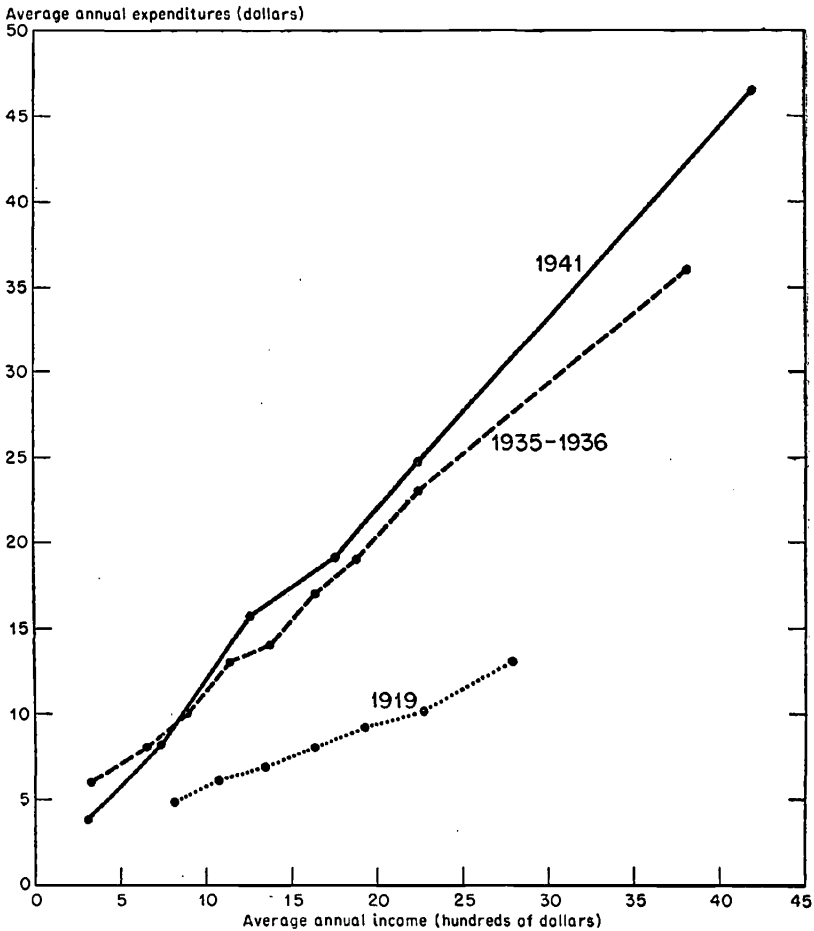


Source: Same as in Table 12.

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CHART 6

Expenditures of Urban Families on Barbers and Beauty Parlors, by
Income Class, 1919, 1935-1936, 1941
(current dollars)

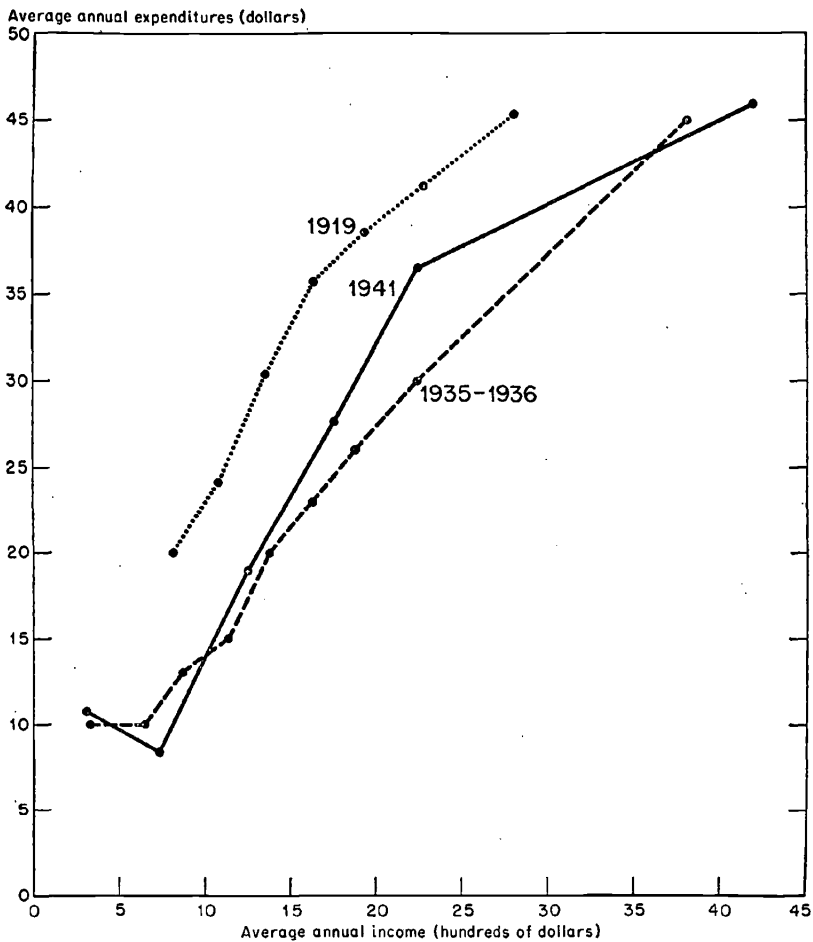


Source: Same as in Table 12.

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CHART 7

Expenditures of Urban Families on Physicians and Oculists, by
Income Class, 1919, 1935-1936, 1941
(current dollars)

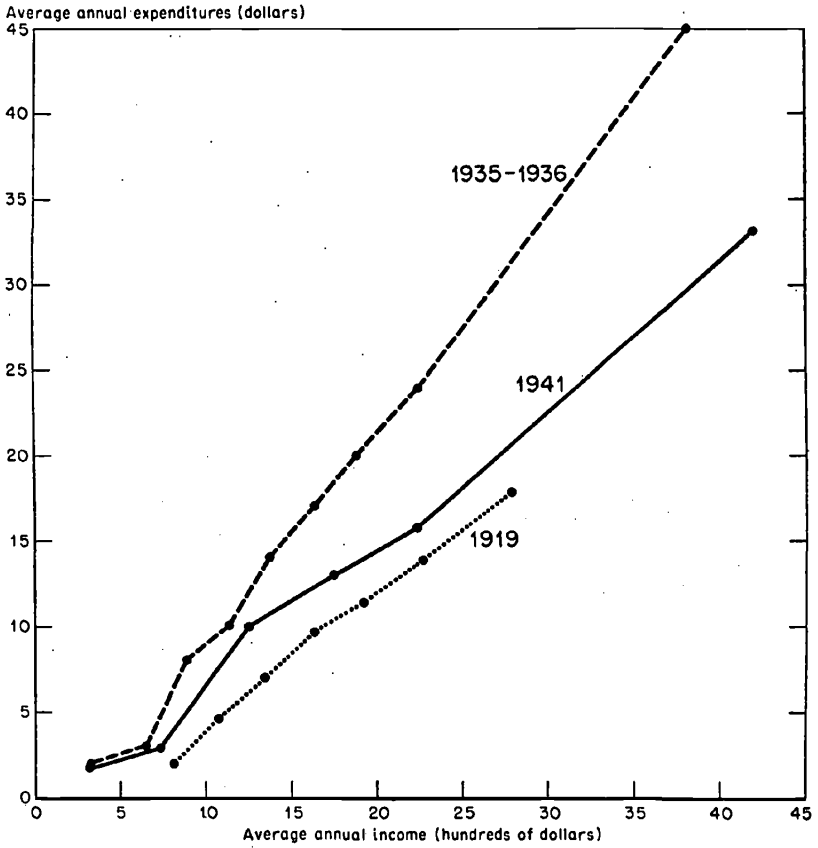


Source: Same as in Table 12.

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CHART 8

**Expenditures of Urban Families on Dental Care, by Income Class,
1919, 1935-1936, 1941
(current dollars)**

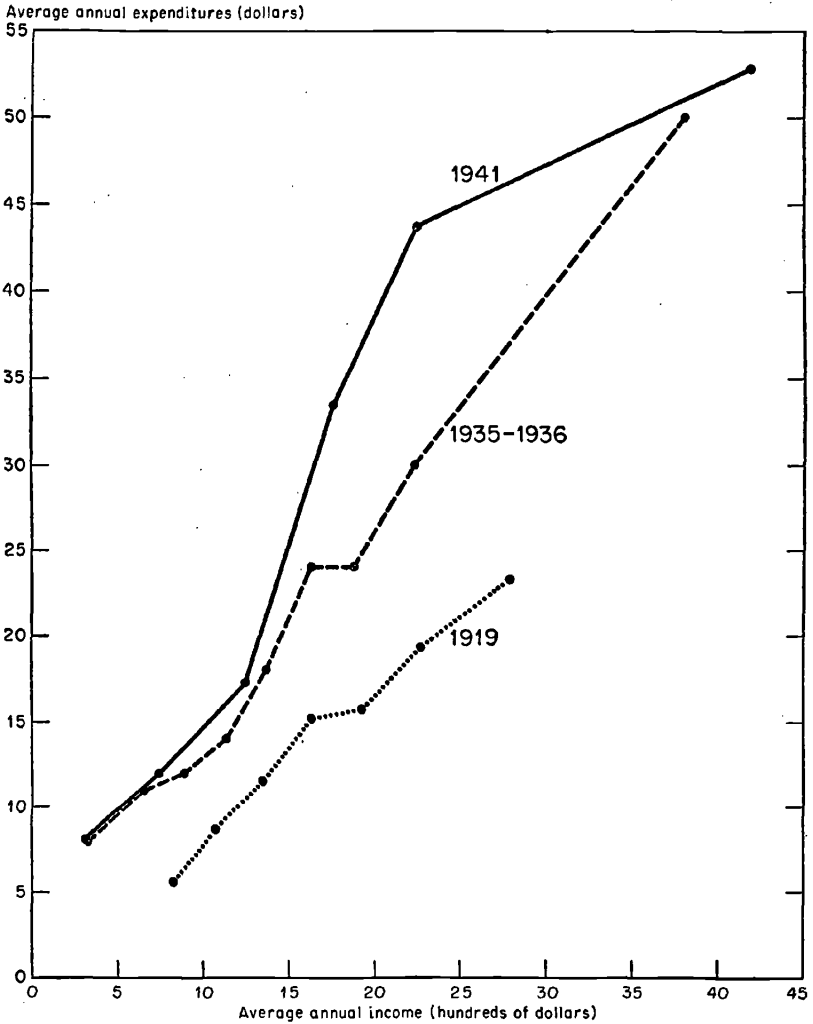


Source: Same as in Table 12.

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CHART 9

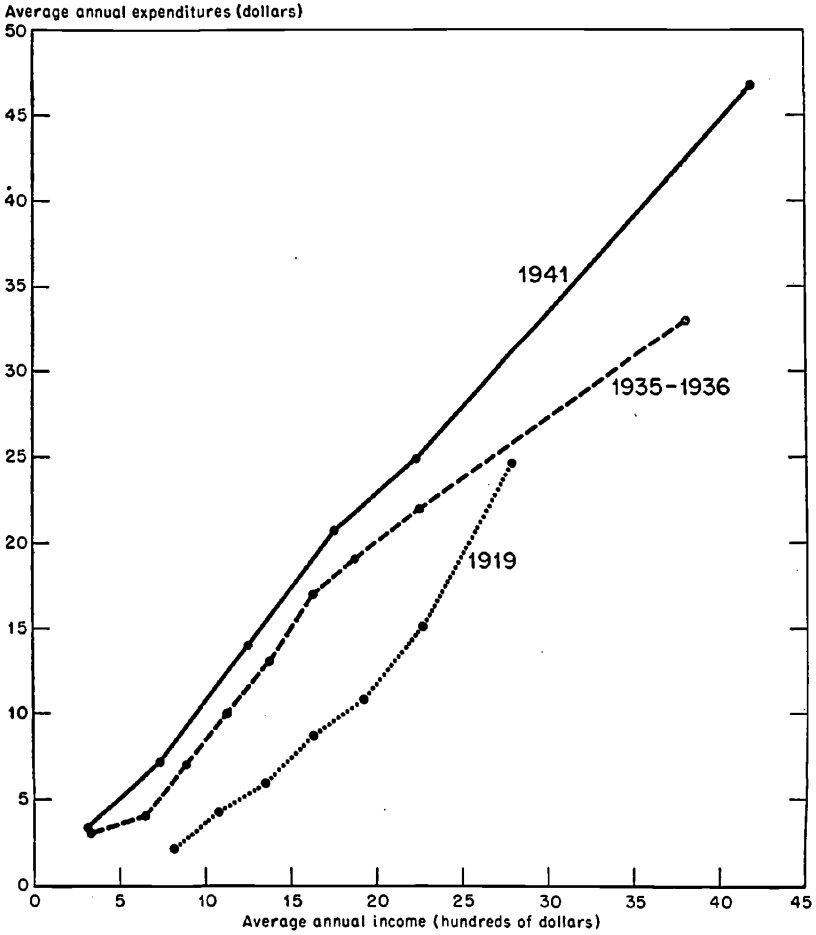
Expenditures of Urban Families on Other Medical Care, by Income Class,
1919, 1935-1936, 1941
(current dollars)



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CHART 10

Expenditures of Urban Families on Movies, by Income Class,
1919, 1935-1936, 1941
(current dollars)

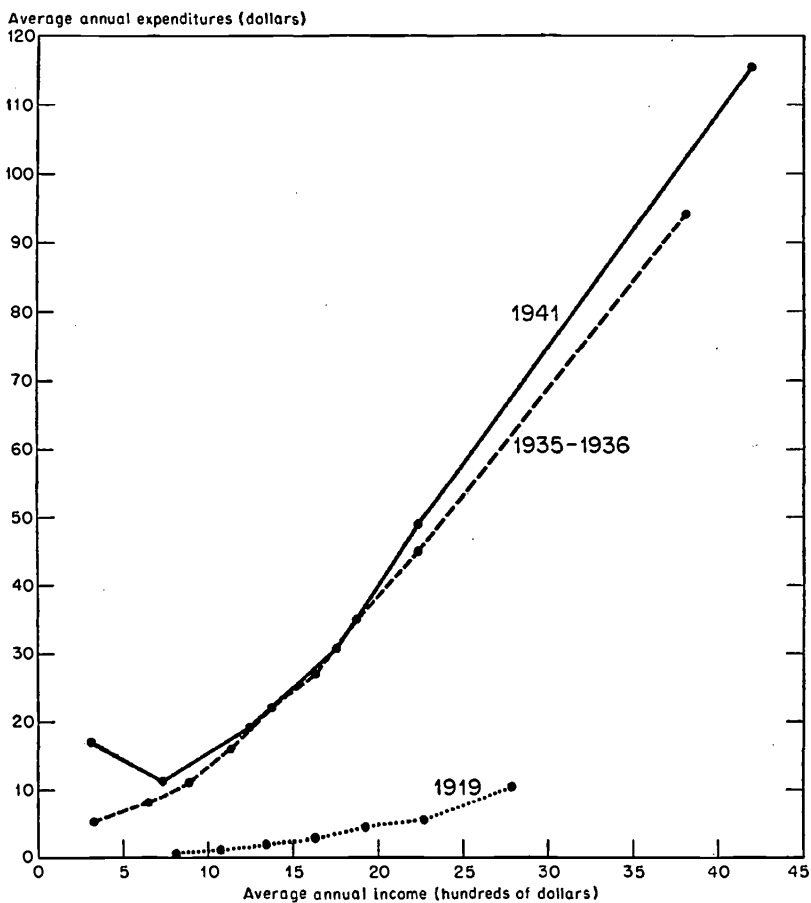


Source: Same as in Table 12.

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CHART 11

Expenditures of Urban Families on Other Amusements, by Income Class,
1919, 1935-1936, 1941
(current dollars)

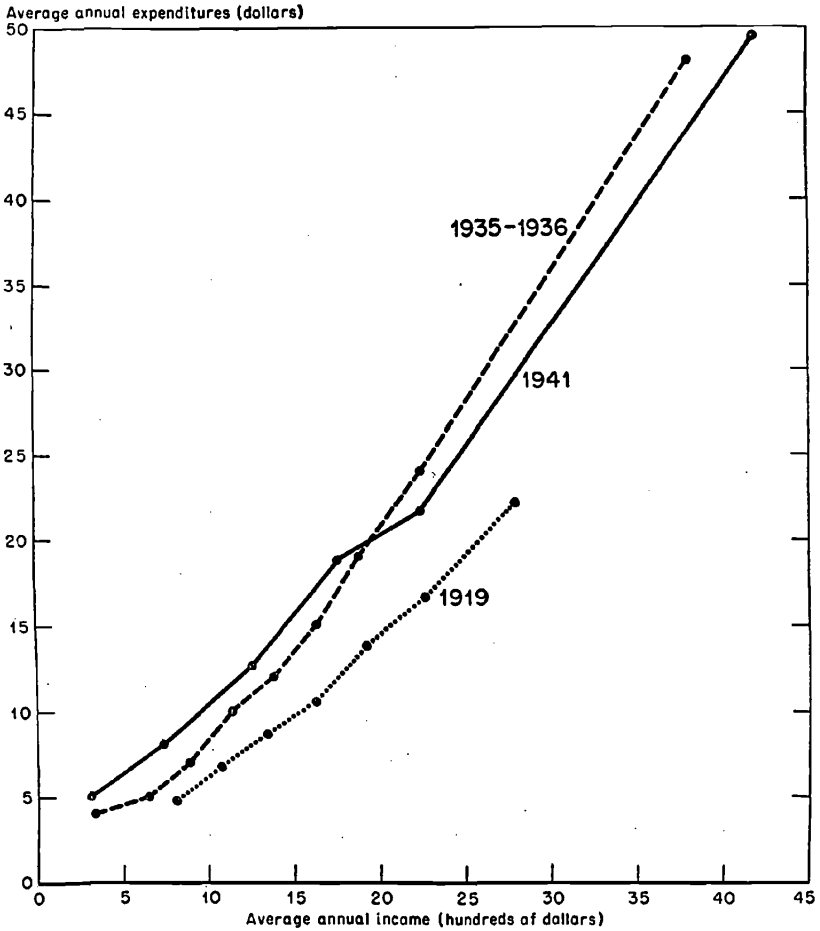


Source: Same as in Table 12.

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CHART 12

Expenditures of Urban Families on Church Contributions, by Income Class,
1919, 1935-1936, 1941
(current dollars)

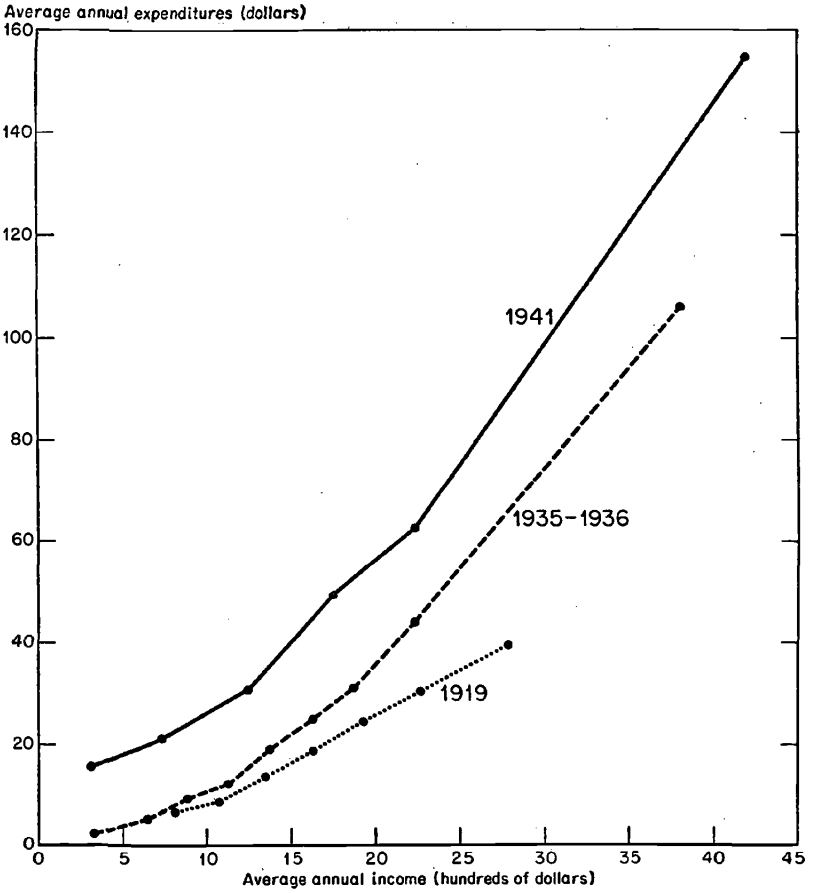


Source: Same as in Table 12.

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CHART 13

Expenditures of Urban Families on Gifts Other than Church Contributions, by
Income Class, 1919, 1935-1936, 1941
(current dollars)

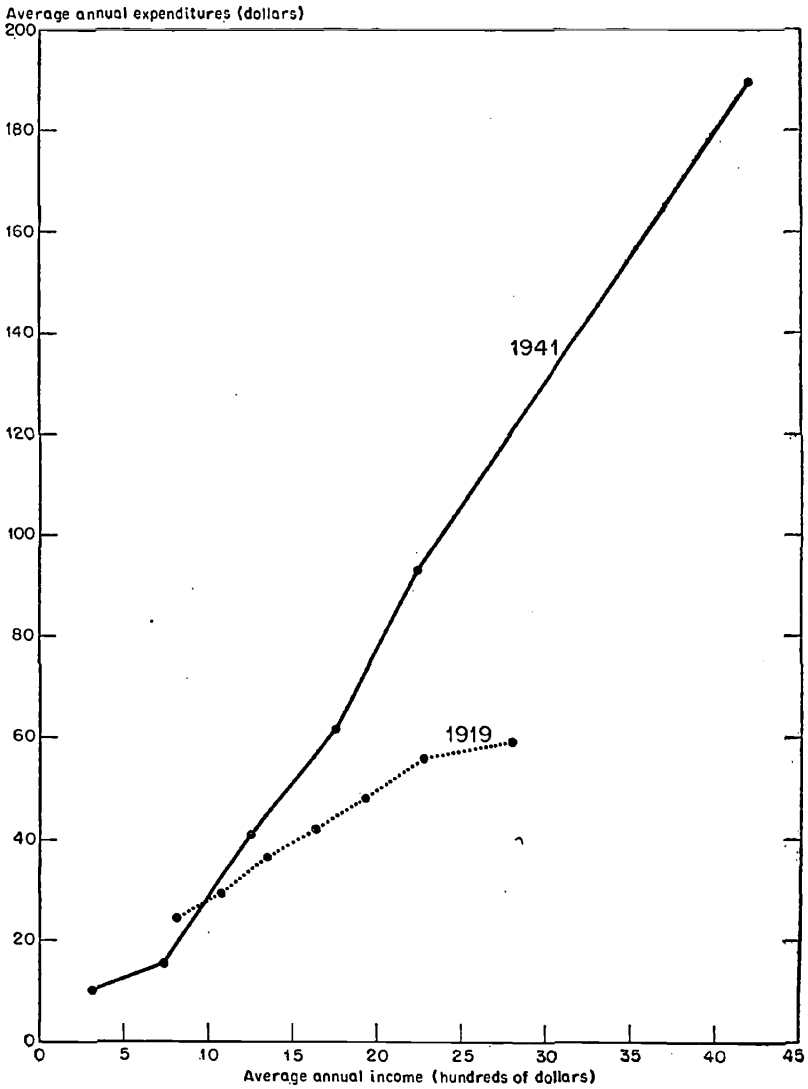


Source: Same as in Table 12.

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CHART 14

Average Annual Expenditures by Urban Families on Life Insurance, by
Income Class, 1919, 1941
(current dollars)

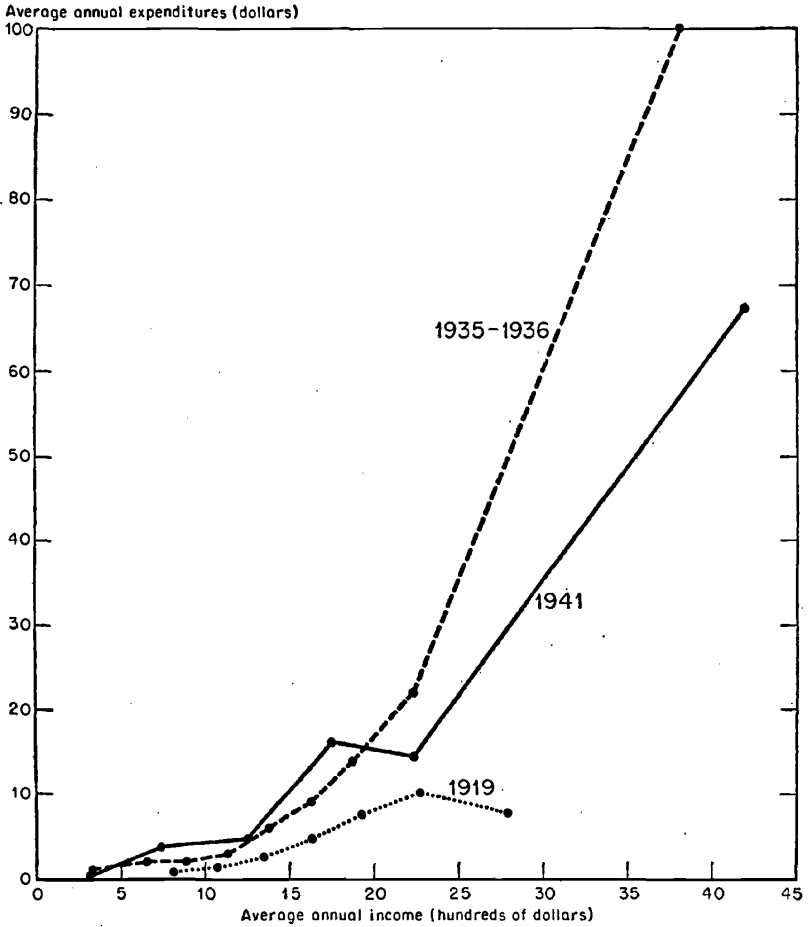


Source: Same as in Table 12.

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CHART 15

Expenditures of Urban Families on Servants, by Income Class,
1919, 1935-1936, 1941
(current dollars)

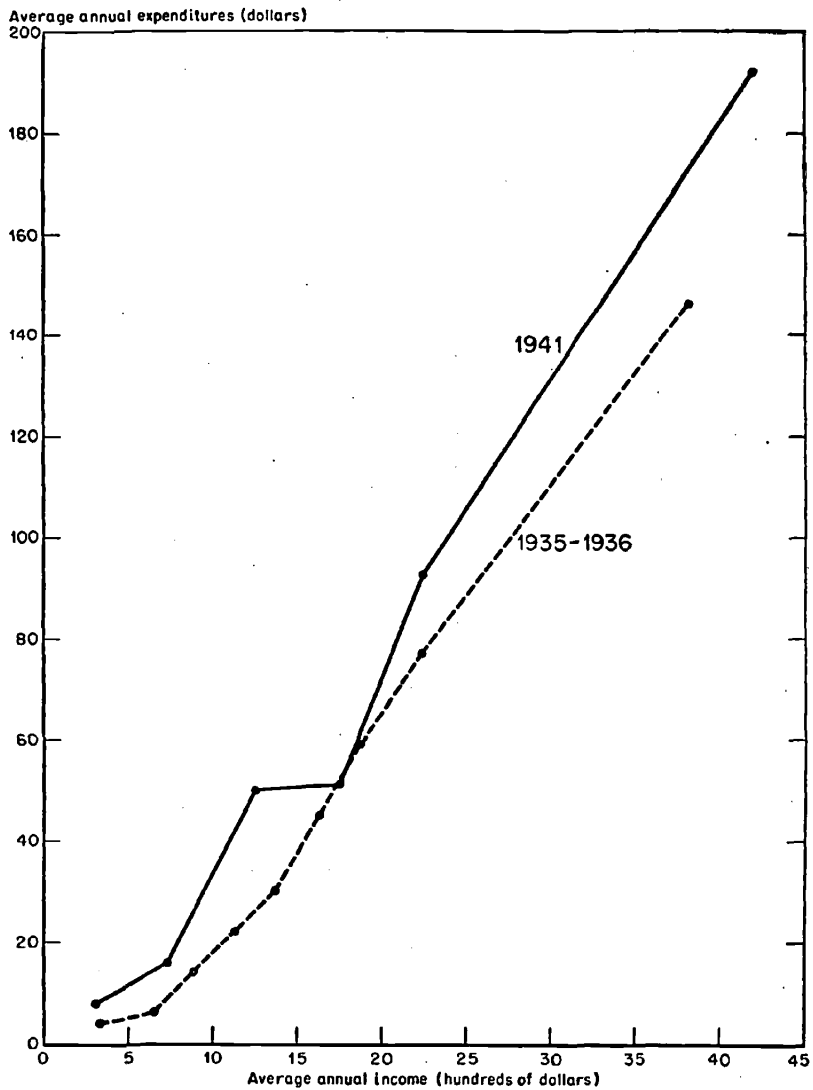


Source: Same as in Table 12.

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CHART 16

Expenditures of Urban Families on Food Outside Home, by Income Class,
1935-1936, 1941
(current dollars)



Source: Same as in Table 12.

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The second general characteristic of the income curves is their upward shift. The percentage of a \$1,500 income spent on each category rose in eleven and fell in only three categories (and in one of these three, physicians and oculists, the fall may simply reflect a shift to health insurance and hospital expenditures); see Table 13.

TABLE 13

Percentage of Income Spent on Services by Families with \$1,500 Income, 1919, 1935-1936, and 1941

<i>Expenditure Category</i>	1919	1935-1936	1941
Personal			
Laundry sent out	.82	.73	.91
Barber and beauty shops	.50	1.03	1.16
Health			
Physicians and oculists	2.87	1.43	1.55
Dentists	.55	1.03	.76
Other medical care	.89	1.40	1.69
Amusement			
Dues, social and recreational	.23	n.a.	.14
Movies	.49	1.00	1.16
Other	.14	1.63	1.65
Contributions and gifts			
Church	.64	.90	1.05
Other	1.08	1.47	2.68
Other			
Life insurance	2.60	n.a.	3.41
School: tuition, books, etc.	.27	.57	.28
Servants	.25	.50	.70
Food outside home	n.a.	2.50	3.36
Auto repairs	n.a.	n.a.	.48

n.a. = not available.

Source: Same as in Table 12.

Since an income of \$1,500 had a lower real value in 1919 than in the other years, the comparison slightly understates the shares spent in 1919 upon categories with high income elasticities.

From the 1941 budgetary data we should be inclined to predict, on the usual line of reasoning, the following order of rates of increase of employees as national income rose: (1) servants; (2) insurance agents; (3) dentists; (4) religious and social workers; (5) laundry operatives; (6) barbers, beauty parlor workers; and (7) physicians. (We have chosen only categories that can be approximately matched by data from the occupational censuses.) The actual order of rates of increase, from 1920 to 1940, was: 2,

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6, 5, 3, 1, 4, 7.⁸ Hence the income curves gave wholly useless predictions of the comparative rates of increase of these fields.

Because of the small number of categories, the rough matching of budgetary and occupational data, the difference between expenditure and employment, and the absence of price data, this is an imperfect test of the use of budgetary data to predict trends over time. We therefore turn to other areas of consumption to test the procedure more systematically.

2. FOOD CONSUMPTION

We take twenty foods for which we know per capita consumption, and "predict" their change in consumption between 1923-1925 and 1946-1948, given the knowledge of how consumption varied with income in 1941, and how consumer income increased over the period. In more detail, the steps in the prediction were as follows:

1. Average family income in 1923-1925 and 1946-1948 was calculated in constant (1929) prices. In the former period it was \$2,620, in the latter period \$3,858.⁹
2. Given the 1941 pattern of consumption by income, the consumption in 1923-1925 and 1946-1948 is calculated for the average incomes just given, assuming that the distribution of income did not change during the period.¹⁰

⁸ The number of persons in each group per 1,000,000 population was:

Occupation	1920	1940
Servants	14,048	15,934
Insurance agents	1,134	1,913
Clergymen, religious and social workers	1,594	1,895
Dentists	531	542
Laundry operatives	1,142	1,779
Barbers, hairdressers, and manicurists	2,045	3,343
Physicians and surgeons	1,419	1,304

⁹ For the former period we use Simon Kuznets, *National Income and Its Composition, 1919-1938*, National Bureau of Economic Research, 1941, p. 147; households were interpolated by total population. For the latter period we use Dept. of Commerce personal income deflated by the index of consumer prices; households are from *Estimates of the Population of Continental United States: 1940-1948*, Dept. of Commerce, Current Population Reports, Series P-25, No. 13, August 13, 1948, and *Households by Type, Composition, and Housing Characteristics in 1947*, Current Population Reports, Series P-20, No. 16, May 5, 1948.

¹⁰ The budgetary data are from *The National Food Situation*, Dept. of Agriculture, July 1942; they are revisions of 1935-1936 data.

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3. The actual per capita consumption of each food in each period, and the average retail price of each food in cities, were also calculated.¹¹

A summary of these calculations is given in Table 14.

For a very few of these foods, the actual and predicted changes in consumption are fairly close (for example, beef and pork), but for other foods the divergences are often huge (for example, evaporated milk, butter, and sugar). The coefficient of correlation between actual and predicted changes in consumption is almost zero (.013). The effect of change in relative prices on consumption is more evident (the coefficient of correlation is -0.328). On the whole, this experiment must also be judged a failure.

3. COMPOSITION OF TOTAL EXPENDITURES

Since the relative desires of consumers for specific commodities are less stable than their desires for broad categories, we have made a final experiment. Each of the nine broad classes of expenditures reported by the Department of Commerce was approximated from data in the 1935-1936 Consumer Purchases Study, and the budgetary aggregates for 1935-1936 were used to predict expenditures to 1948. This period is unfortunately very short, but the data do not go back of 1929, and there was a very large increase of real income between 1935-1936 and 1948. The steps in the prediction (which are summarized in Table 15) were as follows:

1. The percentage changes in consumer expenditures between 1935-1936 (averaged) and 1948 were calculated; they are given in column 1 of Table 15.¹²
2. Personal income per economic unit (deflated to 1935-1936 prices by the BLS index of consumer prices) was estimated to be \$2,932 in 1948. A new income distribution with this mean, and with the same relative distribution as in 1935-1936, was constructed. With this new distribution, aggre-

¹¹ The consumption data are from *Consumption of Food in the United States, 1909-1948*, Dept. of Agriculture, Misc. Pub. 691, 1949; the price data are from the following Bureau of Labor Statistics publications: *Retail Prices, 1890-1926*, Bull. 445, 1927, *Retail Prices of Food 1946 and 1947*, Bull. 938, 1948, and *Retail Prices for Food, 1948*, Bull. 965, 1949. Where several types of a food are priced, as with beef, their prices are averaged using the weights in the index of consumer prices (*City Worker's Family Budget*, Bureau of Labor Statistics, Series R. 1909).

¹² *National Income Supplement, 1951, Survey of Current Business*, Dept. of Commerce, 1947, and *Survey of Current Business*, July 1949.

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TABLE 14

Changes in Per Capita Consumption of Twenty Foods
from 1923-1925 to 1946-1948, Actual and Predicted

	<i>Actual Per Cent Change in Per Capita Consump- tion, 1923-1925 to 1946-1948</i>	<i>Predicted Per Cent Change in Per Capita Consumption Based on Budget Data</i>	<i>Per Cent Change in Retail Price, 1923-1925 to 1946-1948</i>
Meats			
Beef	9.2	11.7	118.5
Lamb	8.3	45.1	63.7
Pork	.3	5.5	89.6
Poultry	23.9	29.0	58.3
Sea food	-3.5	7.7	123.5
Eggs	18.5	5.1	37.0
Dairy products			
Milk	17.3	5.5	41.8
Cheese	51.5	10.5	60.4
Butter	-40.6	7.3	47.1
Evaporated milk	71.5	-5.8	19.8
Other fats and oils	46.7	0.0	37.1
Flour	-18.3	-10.2	68.9
Vegetables			
Potatoes	-25.1	1.3	66.2
Other fresh vegetables	28.1	7.3	27.7
Canned tomatoes	-34.8	11.9	28.0
Canned green and yellow vegetables	58.1	7.4	-4.5
Dried vegetables	20.3	-12.2	84.2
Fruits			
Fresh citrus	83.6	26.3	-7.6
Dried fruits	-28.7	10.0	21.0
Sugar	110.3	1.5	1.1

Source: Simon Kuznets, *National Income and Its Composition, 1919-1938*, National Bureau of Economic Research, 1941, p. 147; *Estimates of the Population of Continental United States: 1940-1948*, Dept. of Commerce, Current Population Reports, Series P-25, No. 13, August 13, 1948; *Households by Type, Composition, and Housing Characteristics in 1947*, Current Population Reports, Series P-20, No. 16, May 5, 1948; *The National Food Situation*, Bureau of Agricultural Economics, July 1942; *Consumption of Food in the United States, 1909-1948*, Dept. of Agriculture, Misc. Pub. 691, 1949; and the following Bureau of Labor Statistics publications: *Retail Prices, 1890-1926*, Bull. 445, 1927; *Retail Prices of Food 1946 and 1947*, Bull. 938, 1948; *Retail Prices of Food, 1948*, Bull. 965, 1949; and *City Worker's Family Budget*, Series R. 1909.

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TABLE 15

Percentage Changes in Consumer Expenditures,
1935-1936 to 1948

CATEGORY	DEPART- MENT OF COMMERCE (1)	BUDGET STUDY PREDICTIONS			
		"Real Terms" (2)	Current Dollars (3)	Relative Price (4)	"Final" Estimate (5)
Food and tobacco	245.8	44.9	77.9	1.177	91.7
Clothing	222.2	92.3	160.2	1.173	187.9
Personal care	172.0	69.2	120.1	1.064	127.8
Housing	105.5	70.5	122.4	.707	86.5
Household operation	200.0	84.0	145.8	.917	133.7
Medical care	204.5	91.1	158.1	.813	128.5
Transportation	213.2	114.4	198.6	.768	152.5
Recreation	257.0	105.4	183.0	.930	170.2
Education	128.7	161.5	280.4	n.a.	n.a.
Total expenditure	201.2	73.0	126.7		

n.a. = not available.

Column

Source

- 1 *National Income Supplement, 1947, Survey of Current Business, Dept. of Commerce, Table 30, and Survey of Current Business, July 1949, Table 28.*
- 2 *Consumer Incomes in the United States, 1938, Table 2, p. 6, and Consumer Expenditures in the United States, 1939, Table 20A, p. 84, both published by the National Resources Committee.*
- 3, 4 *Consumer Prices in the United States, 1942-1948, Bureau of Labor Statistics, Bull. 966, 1949, Table A, p. 44.*
- 5 Col. 3 x col. 4.

gate expenditures were calculated for 1948, using 1935-1936 budgetary data (column 2).

3. The predicted expenditures in 1948 were increased by 73.6 per cent, which was the percentage rise of the index of consumer prices over 1935-1936 (column 3).
4. Price indexes for the various categories of expenditure were estimated, and divided by the over-all rise of 73.6 per cent to obtain relative price movements (column 4). No price index was available for education.¹³
5. Finally, columns 3 and 4 were multiplied to get the "final" estimates of 1948 expenditures.

Before we discuss the results, certain steps and omissions of steps should be explained. In effect, we assume that the relative

¹³ *Consumers' Prices in the United States, 1942-48, Bureau of Labor Statistics, Bull. 966, 1949.*

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prices of (e.g.) food and clothing have no effect upon the physical quantities or qualities of each purchased (step 5 above). Of course this is an extreme assumption, and can be defended only as being almost as good as any available alternative. We should expect our predicted expenditures to fall below actual expenditures for two reasons: (1) the 1935-1936 budgetary study reports about 20 per cent less expenditures than the Department of Commerce, and we have made no adjustment for this; and (2) no allowance was made for the increase in the number of consumer units during the period (chiefly because the Consumer Purchases Study "family" and "single individual" differ so from census categories). Even if we eliminated these two sources of discrepancy, the predicted expenditures would, of course, fall far short of actual 1948 expenditures because the marginal propensity to consume is much smaller when calculated from budgetary data than when calculated from time series. However, our chief interest is in the relative pattern of expenditures.

The results of this second test are somewhat better than those of the previous test. If we eliminate educational expenditures (where college attendance of veterans at government cost had large effects), the coefficient of correlation between predicted and actual expenditures was .522. This is hardly a good prediction for only a 12.5-year period. For longer-run predictions the method cannot be expected, on this evidence, to yield useful results. It is instructive, moreover, that the predicted expenditures are even less closely correlated with actual expenditures if the changes in relative prices are left out of account, so even to achieve this level of precision one must also predict relative price movements.

The lack of a close correspondence between budgetary and temporal patterns of consumption could be due to many factors, but three seem especially important.

First, the budgetary data do not portray the long-run consumption habits of consumers. In a given year many people are in different income classes from those which they habitually or on the average occupy, due to good or bad fortune, illness, etc. Moreover, when the aggregate income of the community is changing rapidly (it had risen by 16 per cent over the previous twelve months in 1935-1936), the consumers will not have made full adjustments to their current incomes.

Second, the usual budgetary data (at least in the over-all form used here) ignore the very substantial effects on spending patterns

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(income being given) of other factors such as family composition. For example, in 1941, single individuals were 22.9 per cent of all consumer units in the \$500-\$1,000 income class, and 14.3 per cent of the \$1,000-\$1,500 class. When we add \$500 to the lower income class, to predict consumption at the higher income level of the community, we assume that 14.3 per cent of the new \$1,000-\$1,500 class are single individuals, whereas actually 22.9 per cent will be. Since single individuals have different spending patterns,¹⁴ this is a source of error in the predictions. It can be eliminated, or at least reduced greatly, by working with the budgets of more homogeneous consumer classes (e.g. classified by size of family, size of community, occupation, etc.) but only at an enormous increase in the labor of using the method.

Finally, over time two factors which are relatively constant in budgets can change materially: one is relative prices and the other is consumer preferences. These factors are so important in affecting the consumption of individual consumers that failure to take them into account will probably vitiate predictions. They may well be less important for the broader categories of expenditures, but this cannot be settled at present.

¹⁴ For example, in the 1941 income class \$500-\$1,000:

	<i>Single Individuals</i>	<i>Families</i>
Food	\$297	\$447
Housing	207	234