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*Part Five*

THREE ESTIMATES OF  
THE VALUE OF THE NATION'S OUTPUT  
OF COMMODITIES AND SERVICES  
A COMPARISON

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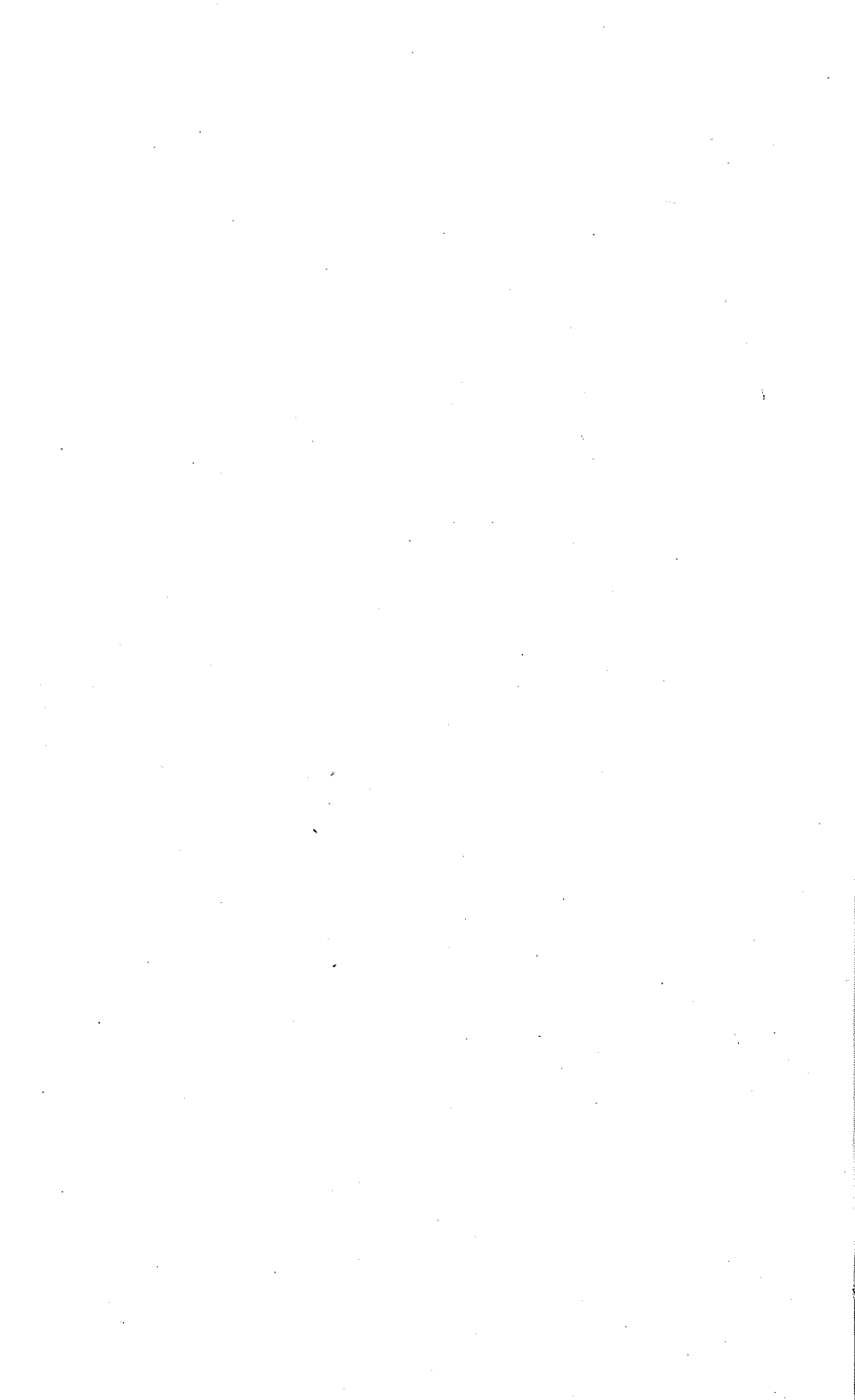
*Discussion*

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THREE ESTIMATES OF  
THE VALUE OF THE NATION'S OUTPUT  
OF COMMODITIES AND SERVICES  
A COMPARISON

CLARK WARBURTON

DURING the last five years the results of three extensive investigations of the value of the nation's output of commodities and services have been published. Since all three cover in considerable part the same field, it is desirable to compare their concepts and results. The first, launched in 1930, was conducted by W. H. Lough of Tradeways, Inc. and the results were published in 1935 in his *High-Level Consumption*. The most recently published, and by far the most elaborate, was conducted by Simon Kuznets of the National Bureau of Economic Research at the request of the Committee on Credit and Banking of the Social Science Research Council. Begun in 1933, the results were published in 1938 in two volumes: *National Income and Capital Formation, 1919-1935*, and *Commodity Flow and Capital Formation, Volume One*. The third was started in 1932 by the present author in connection with the Brookings Institution's investigation of the distribution of wealth and income in relation to economic progress. Two sets of estimates, one based on surveys of family expenditures and the other on census and trade data, were prepared for use in *America's Capacity to Consume*.<sup>1</sup> The estimates based on surveys of family expenditures were published in that volume, but the estimates based on census and trade data, which are more

<sup>1</sup> H. G. Moulton, Maurice Leven, and Clark Warburton (Brookings Institution, 1934).

reliable and more detailed, were deleted before publication by the senior author of the volume. Brief summaries of the estimates based on census and trade data were published in two articles in the *Journal of the American Statistical Association*.<sup>2</sup> The detailed estimates underlying the summary figures have not been published but have been available since 1934 in manuscript form and will be drawn upon in making comparisons with the results of the other two investigations.<sup>3</sup>

### *I Scope, Objectives, Categories, and Time Coverage*

#### 1 SCOPE AND OBJECTIVES OF THE THREE INVESTIGATIONS

The fields covered by these three investigations are closely related but by no means identical. Lough's investigation was directed primarily toward an analysis of consumption or consumer spending by the American people, with collateral attention to the savings of individuals and of the nation. Kuznets' investigation was concentrated upon capital formation. However, the process of measuring capital formation involved the preparation of estimates of the value of all kinds of commodities produced for consumption; and these estimates, together with National Bureau estimates of national income, were used to obtain estimates of the value of consumers' services not embodied in commodities. The objective of the author's estimates prepared for the Brookings Institution was to provide a summary of the utilization of the entire income of all the people of the nation, thus covering the value of both consumers' commodities and services and new capital equipment.<sup>4</sup>

<sup>2</sup> Clark Warburton, 'Value of the Gross National Product and its Components, 1919-29', *Journal of the American Statistical Association*, XXIX (December 1934), 383-8, and 'How the National Income was Spent, 1919-29', *ibid.* XXX (March 1935 supplement), 175-82. Some of the estimates were revised slightly in preparing the second of these articles. Both articles, using the revised figures, were included in a memorandum submitted in December 1934 to the Committee on Industry and Trade, Social Science Research Council. In this paper, references will be made to that memorandum, rather than to the two original articles in the *Journal of the American Statistical Association*.

<sup>3</sup> The detailed estimates for 1929 are given in Tables 11 and 17 of this paper.

<sup>4</sup> This is a statement of the objective of the present author's work, not of the larger investigation into wealth and income, of which it was a part.

## 2 CATEGORIES

In all three surveys consumers' outlay, or value of consumers' commodities and services, was segregated from savings or capital formation.<sup>5</sup> However, the categories into which these two major segments of the nation's output were divided differ substantially, reflecting the differences in the objectives of the investigations.

In the National Bureau investigation primary emphasis was placed upon the durability of commodities; for this reason, the character of Kuznets' classification of consumers' outlay is entirely different from those of Lough and Warburton. The three sets of categories are compared in the accompanying summary.

KUZNETS	WARBURTON <sup>6</sup>	LOUGH <sup>7</sup>
Perishable commodities	Food and non-alcoholic beverages	Food and soft drinks
Semidurable commodities	Home maintenance	Home maintenance
Consumers' durable commodities	Attire	Clothing
Services not embodied in commodities (estimated only as a residual)	Transportation	Personal appearance
	Communication	Transportation
	Health and medical care	Sickness and death
	Protective and civil services	Social-cultural activities
	Education and reading matter	Direct taxes
	Social organizations	Recreation
	Recreation and art goods	Tobacco
	Stimulants	Alcoholic beverages and other illegal commodities

In the capital formation, or savings, segment of the nation's output, Kuznets' categories and those of Warburton in the estimate derived from census and trade data are similar. These sets of categories, however, differ decidedly from those of Lough and from those of Warburton in the estimate based on surveys of family expenditures. The differences arise because the former two sets of categories relate to the value of the various types of capital goods produced during the year, while the latter two sets relate to the amounts set aside by the people of the nation for acquisi-

<sup>5</sup> Kuznets' terminology is used in the text of this report to refer to concepts given different designations in the three investigations.

<sup>6</sup> In the estimates prepared from surveys of family expenditures all categories except the first three were combined into a single category, 'other living'.

<sup>7</sup> The order of listing has been rearranged for more convenient comparison.

tion of property other than consumers' commodities and services. In all four sets of categories, shown in the accompanying outline, both gross and net totals are included, but the differences between gross and net totals also reflect the divergent character of the various sets of categories.

## KUZNETS

*Gross capital formation*

- Consumers
  - Residential construction
- Business
  - Producers' durable commodities
  - Business construction
  - Changes in business inventories
- Public agencies
  - Public construction
- Changes in stocks of silver and gold
- Unallocable
- Net changes in claims against foreign countries

*Deductions to obtain net capital formation*

- Consumption of capital goods by
  - Residential real estate
  - Business
  - Government

## WARBURTON (FROM SURVEYS OF FAMILY AND INSTITUTIONAL EXPENDITURES)

*Savings: amounts used for accumulation of assets by*

- Families and unattached individuals
- Business enterprises
- Social organizations (incl. governments)

*Deductions to obtain net savings*

- Return to income flow
  - Capital gains
  - Insurance benefits
  - Commissions, fraudulent securities, etc.
- Depreciation and depletion allowances
  - Business enterprises
  - Owner-occupied homes
  - Public and semi-public structures and equipment

## WARBURTON (FROM CENSUS AND TRADE DATA)

*Capital goods, gross value*

- Structures and equipment
  - Residential buildings
  - Commercial and industrial buildings
  - Public and semi-public buildings
  - Highways and streets
  - Other transportation structures
  - Public utility structures
- Machinery and equipment
- Miscellaneous construction
- Increase in inventories
- Increase in investment abroad

*Deductions to obtain net value*

- Depreciation of structures and equipment

## LOUGH

*Savings: total annual acquisitions by consumers (natural persons)*

- Increases in cash holdings
- Payments for holdings of securities
- Payments of life insurance premiums
- Payments for holdings of real property

*Deductions to obtain net savings of individuals*

- Realized profits and capital gains from sale of assets
- Receipts of funds withdrawn from life insurance companies

### 3 TIME COVERAGE

The periods covered by the three investigations are not identical, but overlap. Kuznets gives estimates for each year during 1919-35. The Lough survey covers the odd years during 1919-31 and also the two years 1909 and 1914. The Warburton estimates were confined to the odd years during 1919-29. In both Kuznets' and Warburton's estimates special emphasis was placed upon 1929 because of the greater availability of data for that year.

### 4 CATEGORY ADJUSTMENTS NECESSARY FOR COMPARISON

Direct comparison of the results of the three investigations is difficult because of the differences in major objectives and the corresponding differences in the categories used. In comparing the estimates relating to consumers' outlay it is necessary either to regroup the minor categories used by Kuznets into major groups similar to those used by Warburton and Lough, or to regroup the minor categories used by Lough and Warburton into the major groups used by Kuznets. Both methods of regrouping are used in the following comparisons.

The categories used in Kuznets' gross and net capital formation, and in Warburton's gross and net value of capital goods, can be adjusted for comparison. It is possible, also, to compare the net totals, and some of the items, in Lough's and Warburton's estimates of individuals' savings. These estimates of savings, however, can be compared with those of capital formation only by taking into account numerous differences between the dollar volume of savings and the amount of capital formation. This is a field in which estimates were prepared by only one of the three investigations.<sup>8</sup>

### 5 SCOPE AND FOCUS OF COMPARISONS MADE IN THIS PAPER

The comparisons in this paper relate to the estimates of the two major segments of the value of the national product, consumers' outlay and capital formation, and of their components. The estimates of savings, and the relation of savings to capital formation,

<sup>8</sup> The present writer's estimates of the magnitude of these differences were given in his article, 'Value of the Gross National Product and Its Components, 1919-29', *op. cit.*, and in his paper in *Studies, Volume One, Part Two*, p. 109.



will not be considered. The comparison of the estimates of consumers' outlay and of capital formation will be focused upon the following questions:

1. How close is the agreement among the estimates when the items have been grouped into reasonably comparable categories?
2. To what degree are the differences among the estimates due to (a) minor differences of classification and of estimate, (b) significant differences in methodology and comprehensiveness?
3. What is the character of the significant differences in methodology and comprehensiveness?

Tables in the text of this paper include estimates solely for the odd years during 1919-31, since these are the only years covered by at least two of the three investigations. In Tables 9 and 10, however, appended to this paper, the various estimates for gross and net national product, consumers' outlay, and gross and net capital formation, are given for all years covered by the investigations.

The most comprehensive comparisons, those for the various types of commodities and services included in consumers' outlay, and in capital formation, are made for 1929 alone. The details of these estimates, and the reclassification and adjustments of the data to make them comparable, are given in Tables 11-18.

## *II Comparisons of the Three Sets of Estimates*

Comparison of the results of the three investigations can be most conveniently made in several stages:

1. Totals for consumers' outlay and for gross and net capital formation for the odd years 1919-31.
2. Consumers' outlay, classified according to Kuznets' major categories, for the odd years 1919-31.
3. Consumers' outlay, classified according to Warburton's major categories, for 1929.
4. Gross and net capital formation in 1929, with sufficient reclassification to provide comparability.

## I TOTALS FOR CONSUMERS' OUTLAY AND FOR GROSS AND NET CAPITAL FORMATION

Kuznets' estimates of total consumers' outlay are presented only as three-year averages, but the figures for each year are readily derived by subtracting his estimates of gross capital formation from those for the value of the gross national product, or by subtracting those of net capital formation from those of national income.<sup>9</sup> In Table 1 these estimates are compared with those of Warburton and Lough. Warburton's estimates, it will be noted, are consistently higher than Kuznets', the difference amounting to from \$10 billion to \$13 billion in five of the six years covered by both estimates, and to \$6 billion in the sixth year. Warburton's estimates range from 11 to 21 per cent higher than Kuznets'. Lough's estimates are also higher than Kuznets', but by smaller amounts.

<sup>9</sup> In *National Income and Capital Formation* Kuznets states that differences in the assumption underlying the estimates of national income and those of net capital formation necessitate the use of three-year moving averages when comparing the latter with the former. Kuznets replied to my inquiry concerning the nature of these differences in assumptions as follows:

"The assumptions that are mentioned on p. 52 of *National Income and Capital Formation* are those made in deriving the two series of estimates and forced upon us by lack of specific data. For example, we assume that by and large the relative apportionment of certain commodity groups between finished and unfinished is at the 1929 levels throughout the period (in the measurement of capital formation); in measuring national income we make assumptions concerning income originating in some of the service industries and in the miscellaneous category that result in exceedingly crude measures (e.g., straight line interpolations between 1919 and 1929 of the number of people attached to an industrial division, which is then multiplied by an average income). It would be impossible to list all these assumptions since they are made at the numerous points in the study at which specific data needed are absent. By and large, I would say that the estimates of capital formation reflect more sensitively year-to-year changes than do the measures of national income. For a single year in which most of the Census data are available, such as 1929, the comparison can perhaps be drawn more closely."

Three-year moving averages smooth out the variations in the annual figures. I fail to see, however, how the assumptions mentioned by Kuznets 'necessitate' the use of three-year moving averages, or make three-year moving averages any more reliable than the estimates for each year.

TABLE 1  
ESTIMATES OF CONSUMERS' OUTLAY  
(billions of dollars)

	TOTAL CONSUMERS' OUTLAY <sup>1</sup>				AMOUNT GREATER (+) OR LESS (-) THAN KUZNETS	
	Kuznets	Warburton (census and trade data)	Lough	Warburton (expenditure surveys)	Warburton <sup>2</sup>	Lough
1931	56.3		59.5			+3.2
1929	73.3	85.3	80.1	83.0	+12.0	+6.8
1927	68.6	80.3	72.9	79.4	+11.7	+4.3
1925	64.2	77.2	68.7	77.0	+13.0	+1.5
1923	60.0	71.6	62.4	69.5	+11.6	+2.4
1921	54.7	60.9	52.5	57.9	+ 6.2	-2.2
1919	49.4	59.6	56.5	59.2	+10.2	+7.1

<sup>1</sup> For sources of estimates, see Table 9. <sup>2</sup> Estimate based on census and trade data.

In Table 2 Kuznets' and Warburton's estimates of gross and net capital formation are compared. Greater differences between the estimates occur in the case of gross capital formation than in the case of net capital formation. For gross capital formation,

TABLE 2  
ESTIMATES OF GROSS AND NET CAPITAL FORMATION <sup>1</sup>  
(billions of dollars)

	GROSS CAPITAL FORMATION		NET CAPITAL FORMATION		AMOUNT WARBURTON GREATER (+) OR LESS (-) THAN KUZNETS	
	Kuznets	Warburton	Kuznets	Warburton	Gross	Net
1929	20.3	17.8	10.1	9.7	-2.5	-0.4
1927	18.2	16.6	8.9	9.2	-1.6	+0.3
1925	19.2	20.4	10.6	13.6	+1.2	+3.0
1923	18.2	16.8	9.7	10.5	-1.4	+0.8
1921	11.5	4.3	3.7	-1.5	-7.2	-5.2
1919	19.3	20.7	10.5	15.1	+1.4	+4.6

<sup>1</sup> For sources of estimates, see Table 9.

Warburton's estimates range from \$1.2 billion (or 6 per cent) more than Kuznets' estimates in 1925 to \$7.2 billion (or 63 per cent) less than Kuznets' estimates in 1921. With respect to net capital formation, the differences in 1927 and 1929 are relatively small. In 1925 and in 1919 Warburton's estimates are 28 and 44 per cent higher, respectively, than Kuznets'. In 1921 Warburton's estimate is negative while Kuznets' is positive.

## 2 CONSUMERS' OUTLAY FOR PERISHABLE COMMODITIES, SEMIDURABLE AND DURABLE COMMODITIES, AND SERVICES

In Table 3 are given the three estimates of consumers' outlay, classified in the three categories: (1) perishable commodities, (2) semidurable and durable commodities, (3) services not embodied in commodities. For this table the minor commodity and service groups used in the Lough and Warburton estimates have been regrouped as closely as possible along the lines of demarcation followed by Kuznets. Separation of the semidurable from the durable commodities has not seemed feasible, in view of the character of the Lough and Warburton minor categories; for this reason these two categories of Kuznets have been combined.

In the case of perishable commodities, Warburton's estimates are higher than Kuznets', the difference ranging from \$3.1 to \$3.9 billion, except in 1921, for which year the two estimates are the same. Lough's estimates are fairly close to Kuznets' but are slightly higher in most years. On the average, Warburton's estimates for perishable commodities are 12 per cent, and Lough's estimates 2 per cent, higher than Kuznets'.

In the case of semidurable and durable commodities, both Warburton's and Lough's estimates are consistently lower than Kuznets': Warburton's estimates ranging from \$1.2 to \$2.4 billion, and Lough's from \$1.7 to \$2.7 billion, less than Kuznets'. On the average, Warburton's estimates for semidurable and durable commodities are 9 per cent, and Lough's estimates 11 per cent, lower than Kuznets'.

These contrary tendencies suggest that some commodities classified as semidurable or durable by Kuznets may have been placed among perishable commodities in the Warburton estimate. Careful inspection of the items, however, indicates that this is not a significant factor. The differences in the perishable commodities are due primarily to the inclusion of an estimate for the value of alcoholic beverages in Warburton's estimates but not in Kuznets'. The difference between the two estimates of the value of semidurable and durable commodities is due chiefly to the differences in the percentages of sales of automobiles, tires and tubes, and auto accessories assumed to have been purchased by individuals and by business enterprises respectively.

TABLE 3

ESTIMATES OF CONSUMERS' OUTLAY FOR PERISHABLE COMMODITIES, SEMIDURABLE AND DURABLE COMMODITIES, AND SERVICES <sup>1</sup>

(billions of dollars)

	KUZNETS	WARBURTON	LOUGH	AMOUNT GREATER (+) OR LESS (—) THAN KUZNETS	
				Warburton	Lough
<i>Perishable commodities</i>					
1931	21.5		20.6		—0.9
1929	28.6	32.3	29.3	+3.7	+0.7
1927	26.7	30.6	27.1	+3.9	+0.4
1925	25.4	28.9	26.3	+3.5	+0.9
1923	23.0	26.5	24.2	+3.5	+1.2
1921	22.0	22.0	21.2	0.0	—0.8
1919	24.6	27.6	25.9	+3.0	+1.3
<i>Semidurable and durable commodities</i>					
1931	14.8		12.9		—1.9
1929	22.3	20.0	20.0	—2.3	—2.3
1927	20.9	18.5	18.6	—2.4	—2.3
1925	20.4	18.4	18.5	—2.0	—1.9
1923	19.3	18.1	17.5	—1.2	—1.8
1921	15.3	13.2	13.6	—2.1	—1.7
1919	16.4	15.9	13.7	—0.5	—2.7
<i>Services not embodied in commodities</i>					
1931	20.0		26.0		+6.0
1929	22.5	33.0	30.8	+10.5	+8.3
1927	21.0	31.2	27.2	+10.2	+6.2
1925	18.4	29.9	24.0	+11.5	+5.6
1923	17.8	27.0	20.7	+9.2	+2.9
1921	17.3	25.7	17.8	+8.4	+0.5
1919	8.3	16.1	16.9	+7.8	+8.6

<sup>1</sup> For sources of estimates, see Table 10.

In the case of services not embodied in commodities, both Lough's and Warburton's estimates are far larger than Kuznets'. Warburton's estimates range from \$7.8 to \$11.5 billion (or from 47 to 94 per cent) higher than Kuznets'. Lough's estimates range from \$0.5 to \$8.6 billion more than Kuznets'. One reason for these differences in the estimated value of consumers' services is the treatment of government expenditures. Kuznets and Lough use methods of estimation that evaluate government services to consumers, such as education and medical care, at the amount of direct taxes paid by individuals. Warburton uses a cost method of evaluation. This difference in the treatment of government

services to consumers is an important, but not dominating, cause of the difference between the Kuznets and Warburton estimates. If the difference in the treatment of government services is eliminated, the Lough and Warburton estimates for consumers' outlay on services, in 1929, are both approximately \$8 billion (or 35 per cent) larger than Kuznets'. The differences for other years, after elimination of the divergent modes of handling government services, cannot be stated as precisely, but are of comparable magnitude.

### 3 CONSUMERS' OUTLAY FOR VARIOUS TYPES OF COMMODITIES AND SERVICES

When consumers' outlay is classified according to the types of goods and services purchased, Kuznets' estimates can be compared in detail with those of Warburton and Lough for 1929 alone and only with respect to commodities. The comparison cannot be made for other years because Kuznets' adjustments of manufacturers' values for trade margins are made by minor commodity groups for 1929 alone. For other years these adjustments are made by major groups: perishable, semidurable, and durable commodities. Detailed comparisons can be made only for commodities because Kuznets' estimate of the value of consumers' services is obtained as a residual between national income on the one hand and the outlay for commodities (consumers' commodities plus net capital formation) on the other, with no estimates of the constituent elements in consumers' services.

In Table 4 the Kuznets and Lough estimates of consumers' outlay in 1929 are reclassified to conform as nearly as possible to the categories used by Warburton, and estimates are given, so far as possible, of the amounts spent by consumers for the various kinds of commodities and services.

The Kuznets, Warburton, and Lough estimates of the total value of consumers' outlay for commodities are fairly close, in view of the differences in methodology used in their preparation. Warburton's estimate is about 3 per cent above, and Lough's about 3 per cent below, Kuznets'. However, if alcoholic beverages and other illegal commodities, which Kuznets excludes, are deducted from Warburton's and Lough's estimates, they are 5 and 7 per cent below Kuznets', respectively.

TABLE 4  
**CONSUMERS' OUTLAY FOR MAJOR TYPES OF GOODS  
 AND SERVICES, 1929**  
*(billions of dollars)*

	COMMODITIES AND SERVICES			
	Kuznets	Warburton <sup>1</sup> (census and trade data)	Lough <sup>2</sup>	Warburton <sup>3</sup> (expenditure surveys)
<i>Total consumers' outlay</i>	73.3	85.3	80.1	83.0
Food and non-alcoholic beverages		20.1	19.5	21.1
Home maintenance		22.4	22.2	22.5
Attire	Not	13.7	12.2	11.6
Transportation	avail-	8.1	9.2	
Communication	able	0.9	1.4	
Health and medical care		3.6	2.9	
Protective and civil services		1.7		
Education and reading		3.6	{ 3.1	} 27.8
Social organizations		1.5	2.2	
Recreation and art goods		3.7	3.5	
Stimulants		6.2	3.8	

<sup>1</sup> Based on census and trade data; see Tables 11 and 12.

<sup>2</sup> See Tables 13 and 14.

When the estimates for the various types of commodities are examined, several are found to be reasonably close. The three estimates of the cost of food, amounting respectively to \$19.4, \$19.9, and \$19.5 billion, are remarkably similar. For home maintenance Warburton's and Lough's estimates are somewhat lower than Kuznets', owing to more conservative evaluations of purchases of furniture and other household equipment. For attire, Kuznets' and Warburton's estimates are almost identical, with Lough's somewhat lower. For the other items, except transportation and stimulants, the three estimates are in substantial agreement. As already noted, the differences among the estimates for stimulants (a category that includes tobacco, alcoholic beverages, narcotics, and chewing gum) is due to the omission of alcoholic beverages from Kuznets' estimate and to a lower evaluation of alcoholic beverages and narcotics by Lough than by Warburton.

The most important difference among these estimates of consumers' outlay for commodities occurs in the case of transportation, for which the Kuznets, Warburton, and Lough estimates amount, respectively, to \$6.6, \$4.5, and \$5.5 billion. These dif-

COMMODITIES			SERVICES		
Kuznets <sup>4</sup>	Warburton <sup>1</sup>	Lough <sup>2</sup>	Kuznets	Warburton <sup>1</sup>	Lough <sup>2</sup>
50.8	52.3	49.3	22.4	31.0	30.8
19.4	19.9	19.5		0.2	
7.6	6.9	7.0		15.5	15.2
11.9	11.9	10.5		1.7	1.7
6.6	4.5	5.5	Not	3.6	3.7
0.4	0.3	0.5	avail-	0.6	0.9
0.9	0.8	0.7	able	2.7	2.2
0.2	0.2	1.0		1.5	2.1
1.0	0.7			2.9	
				1.5	2.2
0.7	0.8	0.7		2.8	2.8
2.1	6.2	3.8			

<sup>2</sup> Warburton, *Memorandum to Committee on Industry and Trade*, Social Science Research Council, December 1934.

<sup>4</sup> See Tables 15 and 16.

ferences, as indicated in Table 5, are accounted for primarily by differences in judgment concerning the proportions of the total production of automobiles, tires and tubes, and auto parts and accessories that should be allocated to consumers' outlay. Kuznets allocated all passenger automobiles, Warburton two-thirds, and Lough 85 per cent, to consumers' outlay. The three allocations for tires are, respectively, 78, 37, and 60 per cent, and those for auto parts and accessories 21, 8, and 30 per cent.

The differences among the results of the three investigations with respect to the value of consumers' outlay on services are primarily due, as noted, to two important differences in methodology: (1) Kuznets and Lough evaluate government services to consumers without specific charge at the amount of taxes collected directly from individuals, while Warburton evaluates these services by estimating their cost; <sup>10</sup> (2) Kuznets evaluates

<sup>10</sup> Kuznets' methodology in *Commodity Flow and Capital Formation, Volume One*, and *National Income and Capital Formation* is such as to make unnecessary in those volumes an explicit statement that this method of evaluating government services to consumers is used. However, in *Studies, Volume One*, p. 237, and *Volume Two*, pp. 292-5, Kuznets states that this method is used.



TABLE 5

ESTIMATES OF TOTAL COST OF TRANSPORTATION COMMODITIES,  
AND AMOUNTS ALLOCATED TO CONSUMERS' OUTLAY, 1929

	RETAIL VALUE OF TOTAL PRODUCTION <sup>1</sup>			PERCENTAGE ALLOCA- TION TO CONSUMERS			CONSUMERS' OUTLAY		
	Kuz-	War-	Lough	Kuz-	War-	Lough	Kuz-	War-	Lough
	nets	burton							
	<i>(billions of dollars)</i>						<i>(billions of dollars)</i>		
<i>Commodities, total</i>	11.0	10.2	9.5	60	44	38	0.6	4.5	5.5
Passenger autos	3.4	3.2	3.2	100	67	85	3.4	2.2	2.7
Gasoline	2.5	3.0	3.0	62	50	50	1.5	1.5	1.5
Lubricating oils	0.7	0.4 <sup>2</sup>		28	50 <sup>2</sup>	50	0.2	0.2	
Tires and tubes	0.9	1.1	0.9	78	37	60	0.7	0.4	0.5
Auto parts and accessories	3.5	2.5	2.4	21	8	30	0.7	0.2	0.7
Misc. vehicles <sup>3</sup>							0.1		0.1

<sup>1</sup> Computed in part by stepping up the value of consumers' outlay on the basis of percentage allocations to consumers. In the case of Kuznets' estimates, it has been assumed that trade margins for these items are the same as the average for the minor commodity group in which they are classified.

<sup>2</sup> Total sales at retail only, rather than value of total production.

<sup>3</sup> Neither retail value of total production nor percentage allocation to consumers can be obtained from data in the respective sources. Consumers' outlay, in the Warburton estimate, is less than \$50 million.

total consumers' outlay for services as the residual between his estimates of national income and of the outlay (consumers' outlay plus net capital formation) for commodities. The first of these two differences in methodology accounts for about one-third, and the second, for about two-thirds, of the total difference between the Kuznets and Warburton estimates.

The margin of error in Kuznets' evaluation of consumers' outlay for services is probably larger than in Warburton's and Lough's. This is because Kuznets' estimate, obtained as a residual, reflects all the errors of estimate in the value of commodities and also those in the National Bureau estimates of national income. If some commodities, such as automobiles, are overvalued in consumers' outlay, and if the national income estimates are somewhat too low as indicators of the sum of consumers' outlay and the value of capital formation, substantial errors might be accumulated in the residual that Kuznets uses as an estimate of the value of consumers' services not embodied in commodities.

TABLE 6  
ESTIMATES OF CONSUMERS' OUTLAY FOR SERVICES, 1929  
(billions of dollars)

	DERIVED FROM KUZNETS <sup>1</sup>	WAR- BURTON <sup>2</sup>	LOUGH <sup>3</sup>
<i>Total value of services not embodied in commodities</i>	22.5	33.0	30.8
Rental value of dwellings	9.8-11.7	11.9	11.2
Domestic service	2.1	1.0	1.9
Government services to individuals	1.2-1.8	4.9	1.2
Other services	9.4-6.9	15.2	16.5
Home maintenance (incl. hotel and room rentals; water, gas, and electricity; garbage and snow removal; repairs and storage)		2.6	2.1
Attire (incl. laundry and dry cleaning; jewelry, watch, and shoe repairing; dressmakers', milliners', and tailors' services; barbering and hairdressing)		1.7	1.7
Transportation (incl. railroad, streetcar, bus, ferry, airplane, and taxicab fares; insurance, storage, and repair of automobiles; moving and expressage)		3.2	3.7
Communication (postal, telephone, and telegraph service)		0.6	0.9
Health and medical care		2.3	2.2
Protective and civil services (incl. mortuary services; fees, fines, and legal services)		0.3	} 0.9
Education and reading		0.4	
Social organizations		1.5	2.2
Recreation and art goods (incl. motion pictures, theatres, and other commercial amusements; camps, licenses, park fees; tourist travel abroad)		2.7	2.8

<sup>1</sup> Total value of services: see Table 10.

Rental value of dwellings: first estimate, Kuznets, *Commodity Flow and Capital Formation, Volume One*, p. 340 (\$9.1 billion increased by \$0.7 billion to cover rental value of farm dwellings); second estimate, Fabricant, *Capital Consumption and Adjustment*, pp. 142, 144, and 146.

Domestic service: estimate prepared under Kuznets' supervision for the Department of Commerce, *National Income, 1929-32*, Senate Doc. 124, 73d Cong., 2d Sess., p. 151 (nurses excl.).

Government services to individuals: first estimate, Lough, *High-Level Consumption*, p. 246; second estimate, Warburton, unpublished ms. (see Table 12, footnote 1). No estimate of the amount of taxes collected from individuals prepared by Kuznets or his associates is available.

Other services: residual.

<sup>2</sup> See Table 12.

<sup>3</sup> Rental value of dwellings and domestic service: Lough, *High-Level Consumption*, p. 242. Other items: see Table 14.

In order to show as clearly as possible the effect of Kuznets' residual method of measuring the value of consumers' services, the present author has taken the liberty of pushing this method one stage farther than Kuznets does in *National Income and Capital Formation*. In Table 6 the Kuznets, Warburton, and Lough estimates of consumers' outlay for services are divided into four parts: (1) rental value of dwellings, (2) domestic service, (3) value of government services rendered to individuals without specific charge, (4) other services not embodied in commodities.

The estimates of the rental value of dwellings and of consumers' outlay for domestic service in Table 6, column headed 'Derived from Kuznets', were prepared by Kuznets or his associates. No estimate prepared by Kuznets of the amount of taxes collected directly from individuals is available, but it is unlikely that his estimate would differ greatly from the range indicated by those of Lough and Warburton. The residual figure for 'other services' is, in consequence, a fair approximation to Kuznets' estimate of consumers' outlay for services other than dwellings, domestic service, and those received from government. This figure indicates that Kuznets evaluates all consumers' services—except dwellings, domestic, and government services—at about half or two-thirds the evaluations made by Warburton and Lough by direct estimation. In order to indicate the wide range of services included in his figures, they are itemized and the Warburton and Lough estimates for the various groups given in the table.

#### 4 GROSS AND NET CAPITAL FORMATION

The Kuznets and Warburton estimates of gross and net capital formation in 1929, with sufficient reclassification of items to make comparisons possible, are given in Table 7. Warburton's estimate of gross capital formation is \$2.5 billion (or 12 per cent) smaller than Kuznets'; but Warburton's estimate of net capital formation is only \$0.4 billion (or 4 per cent) smaller than Kuznets'. These net results are due to several important differences between the two estimates, chiefly (a) a 10 per cent higher evaluation of new structures by Warburton than by Kuznets; (b) a 14 per cent lower evaluation of new machinery and equipment by Warburton than by Kuznets; (c) a 20 per cent smaller estimate of

TABLE 7  
ESTIMATES OF GROSS AND NET CAPITAL FORMATION, 1929  
(billions of dollars)

	KUZNETS	WARBURTON
<i>Gross capital formation</i>	20.3	17.8
<i>Net capital formation</i>	10.1	9.7
<i>Items evaluated on gross basis</i>		
<i>(structures and equipment), total</i>	17.4	17.4
Residential buildings	3.0	3.5
Public structures	2.9	2.6
Business structures, other than for transportation and public utility concerns	2.6	2.8
Transportation and public utility structures	2.0	2.8
Machinery and equipment	6.5	5.7
Farm livestock (gross increase)	0.4	
<i>Items evaluated on net basis, total</i>		
Change in business inventories	2.4	0.1
Change in stocks of silver and gold	0.1	
Change in investment abroad	0.3	0.2
<i>Capital consumption, total</i>		
Residences	2.5	1.8
Public properties	0.6	0.9
Business properties	7.1	5.4

SOURCE: see Table 18.

capital consumption by Warburton than by Kuznets; (d) a very much lower estimate of net change in business inventories by Warburton than by Kuznets (\$0.1 billion as compared with \$2.4 billion).

The differences in evaluation of new structures and equipment, combined with the differences in estimates of capital consumption, produce rather striking differences between the Kuznets and Warburton estimates with respect to net capital formation originating in residential construction, public construction, and business structures and equipment, respectively (Table 8). These divergent estimates of gross and net capital formation are the composite result of several differences in methodology and technique, the more important of which are listed below.

1. The differences in evaluation of new structures seem to be due primarily to a larger allowance by Warburton than by Kuznets for construction in 11 states not covered by the Dodge

TABLE 8  
ESTIMATES OF GROSS AND NET VALUE OF VARIOUS TYPES OF  
CAPITAL FORMATION, 1929  
(billions of dollars)

	VALUE OF NEW STRUCTURES AND EQUIPMENT		CAPITAL CONSUMPTION		NET CAPITAL FORMATION	
	WAR-		WAR-		WAR-	
	KUZNETS	BURTON	KUZNETS	BURTON	KUZNETS	BURTON
<i>All structures and equipment</i>	17.1	17.1	10.2	8.1	8.2	9.3
Residences	3.0	3.5	2.5	1.8	0.5	1.7
Public structures	2.9	2.6	0.6	0.9	2.3	1.7
Business structures	4.6	5.6				
Machinery and equipment	6.5	5.7	} 7.1	5.4	4.4	5.9
Farm livestock	0.4					
<i>Other capital formation:</i>						
Business inventories					2.8	0.3
Stocks of silver and gold					2.4	0.1
Investment abroad					0.1	
					0.3	0.2

Service, and to the use by Kuznets of data not available at the time the Warburton estimates were prepared.

2. The difference in the value of new machinery and equipment is primarily due to the inclusion in Kuznets' estimate of items from the Census of Manufactures omitted from Warburton's estimate, either inadvertently or because they were assumed to be used as materials by other manufacturing establishments.

3. Kuznets makes specific allowance for the gross increase in capital livestock on farms and a corresponding allowance (a nearly identical amount) in capital consumption for gross decrease in value; while Warburton includes only the net change in value along with other farm animals in farm inventories.

4. Kuznets includes depletion in his estimate of capital consumption, while Warburton does not.

5. Warburton makes a larger allowance for depreciation on public properties than Kuznets; both estimates are highly arbitrary.

6. Kuznets adjusts his depreciation estimates for price changes, on the assumption that replacement costs are higher

than the book values of structures and equipment used by business concerns in handling their depreciation accounts. The actual reduction in capital values on account of depreciation, according to Kuznets, is considerably higher than the depreciation allowances claimed by business concerns in preparing their income tax returns.

7. Kuznets also adjusts his evaluation of the net increase in inventories for price change during the year, on the assumption that the practice of evaluating inventories at cost or market, whichever is lower, causes the business evaluations of inventories to be out of line with the evaluation of similar types of goods sold.

8. Kuznets estimates that inventories of concerns engaged in trade increased approximately \$0.4 billion (as reckoned by the concerns in their accounting—that is, prior to the adjustment for price changes mentioned above), while Warburton estimates that the inventories of these concerns decreased by this amount. This contrary result arises because Kuznets estimated total inventories of concerns engaged in trade from estimated total sales and sample data on inventory-sales ratios; while Warburton assumed that changes in inventories of unincorporated concerns engaged in trade were similar, in proportion to the volume of business done, to changes in inventories of corporations engaged in trade, and furthermore, that about 20 per cent of the entire volume of trade had shifted from unincorporated to incorporated concerns during 1919-29, with one-tenth of this shift occurring during 1929.

### *III Conclusion*

In conclusion I should like to make a few general observations regarding evaluation of the nation's output of commodities and services.

1. In general, Warburton's and Lough's evaluations of the cost of specific commodities to ultimate consumers are more conservative than Kuznets'. The larger totals for consumers' outlay obtained by Warburton and Lough are due to (a) more inclusive coverage, (b) direct estimation rather than use of a residual figure in evaluating consumers' services, (c) in the case of War-

burton, the use of the cost instead of the direct tax basis of evaluating government services.

2. Estimation of the value of consumers' outlay for services as the residual between estimates of national income and of the value of commodities is decidedly unreliable, whether used in the form of annual figures or three-year moving averages.

3. The total value of consumers' outlay for commodities and services, plus the net value of capital formation, when the more conservative evaluations of the separate items are used but all items are separately estimated, is several billion dollars larger than the estimates of national income prepared by the Department of Commerce and the National Bureau of Economic Research. A careful analysis of the reasons for this difference is needed.

4. A new comprehensive investigation of the value of the nation's output of commodities and services is urgently needed, at least for recent years, including 1929. In such an investigation, the cost to final consumers of each item or each minor group should be separately estimated for each year. That is, trade margins should be estimated in connection with each item or minor group, rather than by broad groups such as perishable and durable commodities, and no group should be evaluated as a residual. By including 1929 in such a study, the best techniques and evaluations developed by the three investigations discussed in this paper can be used.

TABLE 9  
ESTIMATES OF THE VALUE OF THE NATIONAL PRODUCT AND ITS MAJOR COMPONENTS  
(millions of dollars)

	GROSS NATIONAL PRODUCT		CONSUMERS' OUTLAY		GROSS CAPITAL FORMATION		CAPITAL CONSUMPTION		NET CAPITAL FORMATION		NET NATIONAL PRODUCT OR NATIONAL INCOME	
	Kuznets 1 nets 1	Warbur- ton 2	Kuznets 3 sus	Warbur- ton 2 (Cen- sus)	Lough 4	Warbur- ton 2 (Surveys)	Kuznets 5 nets 5	Warbur- ton 2	Kuznets 6 ton 2	Warbur- ton 2	Kuznets 7 ton 2	Warbur- ton 2
1935	61,243		52,235			9,008	8,208		800		53,035	
1934	55,765		49,704			6,061	7,916		-1,855		47,849	
1933	46,538		42,270			4,268	7,255		-2,987		39,285	
1932	47,202		44,055			3,147	7,574		-4,427		39,628	
1931	64,751		56,287		59,544	8,464	8,742		-278		56,010	
1930	82,723		69,061			13,662	9,783		3,879		72,940	
1929	98,640	103,125	79,342	85,317	80,070	20,298	10,216	17,808	10,082	9,733	83,424	95,050
1928	90,053		72,229			17,824	9,656		8,168		80,397	
1927	86,778	96,912	68,570	80,267	72,947	18,200	9,349	16,615	8,859	9,200	77,429	89,467
1926	88,780		69,743			19,037	9,303		9,734		79,477	
1925	89,419	97,619	64,202	77,189	68,703	19,211	8,567	6,810	10,644	13,590	74,846	90,779
1924	78,791		63,546			15,245	8,422		6,223		70,369	
1923	78,214	88,437	60,015	71,616	62,358	18,199	8,508	6,274	9,691	10,547	69,706	82,163
1922	67,186		53,904			13,282	7,480		5,802		59,706	
1921	66,148	65,167	54,660	60,870	52,531	11,468	7,805	5,822	3,683	-1,525	58,943	59,345



TABLE 9—Cont.  
ESTIMATES OF THE VALUE OF THE NATIONAL PRODUCT AND ITS MAJOR COMPONENTS  
(millions of dollars)

	GROSS NATIONAL PRODUCT		CONSUMER'S OUTLAY		GROSS CAPITAL FORMATION		CAPITAL CONSUMPTION		NET CAPITAL FORMATION		NET NATIONAL PRODUCT OR NATIONAL INCOME		
	Kuznets <sup>1</sup> ton <sup>2</sup>	Warbur- ton <sup>2</sup>	Kuznets <sup>3</sup> (\$ mil.)	Warbur- ton <sup>2</sup> (Cen.)	Kuznets <sup>4</sup> ton <sup>2</sup>	Warbur- ton <sup>2</sup> (Surveys)	Kuznets <sup>5</sup> ton <sup>2</sup>	Warbur- ton <sup>2</sup>	Kuznets <sup>6</sup> ton <sup>2</sup>	Warbur- ton <sup>2</sup>	Kuznets <sup>1</sup>	Warbur- ton <sup>2</sup>	
1920	82,896		60,736										
1919	68,750	80,291	49,499	59,614	56,490	59,200	22,100	10,459	11,650	11,650	72,386		
1914							19,341	8,824	5,531	10,517	15,146	59,926	74,760
1909													

<sup>1</sup> National Income and Capital Formation, p. 24.  
<sup>2</sup> Memorandum to Committee on Industry and Trade.

<sup>3</sup> Census' based on Census and trade data (for details and method, see Table 11). Estimates in column marked 'Surveys' based on surveys of family expenditures (for method see Ap. B, *America's Capacity to Consume*), supplemented by estimated utilization of life insurance benefits, expenditures of governments for services to persons and for capital purposes, and expenditures of endowed institutions and business enterprises (from undistributed income) for capital purposes and for consumers' goods and services.

<sup>4</sup> Value of gross national product minus gross capital formation, see footnotes 1 and 5.

<sup>5</sup> *High-Level Consumption*, pp. 236 and 246 (total consumers' spendings and withholdings, minus savings).

<sup>6</sup> *National Income and Capital Formation*, p. 40, Variant I.

<sup>7</sup> *Commodity Flow and Capital Formation, Volume One*, p. 194.

TABLE 10  
ESTIMATES OF CONSUMERS' OUTLAY FOR COMMODITIES AND SERVICES  
(millions of dollars)

	TOTAL CONSUMERS' OUTLAY <sup>1</sup>			TOTAL FOR COMMODITIES			PERISHABLE COMMODITIES			DURABLE COMMODITIES			SERVICES		
	Kuz- nets	Warbur- ton	Lough	Kuz- nets	Warbur- ton	Lough	Kuz- nets	Warbur- ton	Lough	Kuz- nets	Warbur- ton	Lough	Kuz- nets	Warbur- ton	Lough
1935	52,235			37,164			23,095			14,069			15,071		
1934	49,704			32,954			20,756			12,198			16,750		
1933	42,270			28,558			18,133			10,395			13,742		
1932	44,055			28,675			18,147			10,528			15,380		
1931	50,288		59,544	36,253		39,549	21,481		20,644	14,772		12,905	20,035		25,995
1930	60,061			44,676			26,395			18,281			24,385		
1929	73,342		80,070	50,845		49,243	28,550		32,290	22,295		19,984	22,497		30,327
1928	72,229			48,715			27,348			21,367			23,514		
1927	68,570		80,267	47,504		45,707	26,672		30,600	20,922		18,601	20,976		27,241
1926	69,743			48,469			27,107			21,362			21,274		
1925	64,202		77,189	45,821		44,734	25,404		28,900	26,272		18,462	18,381		23,971
1924	63,546			42,835			23,750			18,635			21,161		
1923	60,015		71,616	42,234		41,674	22,967		26,500	24,173		17,501	17,781		20,683
1922	53,904			37,614			21,410			16,204			16,290		
1921	54,666		60,870	37,353		34,768	22,047		22,000	21,187		13,581	17,307		17,763
1920	60,736			46,355			27,278			19,077			14,381		
1919	49,409		59,614	41,084		39,553	24,046		27,600	25,898		13,655	8,325		16,939
1914			30,619			20,593				13,959		6,544			10,116
1909			26,343			17,366				11,711		5,655			8,977

<sup>1</sup> For sources, see notes to Table 9.

<sup>2</sup> Kuznets, *Commodity Flow and Capital Formation, Volume One*, p. 478 (items I-1, II-1, and III-1).

<sup>3</sup> For 1929, see Table 12. Other years estimated from index numbers based on sample data.

<sup>4</sup> For 1929, see Table 14. Estimates for other years obtained by the same method.

<sup>5</sup> Total consumers' outlay minus total for commodities.

TABLE 11  
 WARBURTON'S ESTIMATES OF THE VALUE OF CONSUMERS' GOODS AND SERVICES, 1929  
 (from unpublished manuscript)

	AGGREGATE VALUE (millions of dollars)	METHOD OF ESTIMATE 1
<i>All Consumers' Goods and Services</i>	85,317	
FOOD AND NON-ALCOHOLIC BEVERAGES, TOTAL	20,055	
<i>Meat, total</i>	4,422	
Beef (4,998 million lb. at \$326)	1,629	
Veal (657 million lb. at \$322)	212	
Mutton and lamb (562 million lb. at \$245)	138	
Pork (excl. lard) (7,069 million lb. at \$266)	2,092	
Value added by curing	203	
Edible organs, other fresh meat, misc. meat products	148	
<i>Dairy products, total</i>	4,195	
Whole milk (19,912 million qt. at \$1.12)	2,389	
Butter (1,966 million lb. at \$50)	983	
Cheese (563 million lb. at \$34)	191	
Evaporated and condensed milk (1,600 million lb. at \$1.115)	184	

Consumption: 80% of carcass weight, B.A.I. Price: B.L.S., B.H.E., B.A.E. quotations, weighted for importance of various cuts and for consumption on farms, in villages and cities.

Consumption: 80% of carcass weight, B.A.I. Price: 98.7% of price of beef, based on wholesale price relationships at Chicago, B.L.S. Consumption and price: same as beef.

Computed from difference between manufacturers' value of cured meat and of equivalent amount of fresh meat, Census of Manufacturers.

Manufacturers' value, adj. for exports, imports, and trade margin (wholesale 12%, retail 25%).

Consumption: B.A.E., adj. for amount used in bakeries and confectionery manufacturing. Cream is included on whole milk basis and also butter made and used on farms, incl. some milk used in making ice cream. Price: B.L.S. quotations and price received by farmers for milk sold at retail, B.A.E.

Consumption: Census of Manufacturers, adj. for exports, imports, and used on farms not incl. (see whole milk).

Consumption: B.A.E. Price: B.L.S., B.H.E., B.A.E. quotations, weighted according to production of various types.

Consumption: Census of Manufacturers, case goods only, adj. for exports and imports. Price: B.L.S., B.H.E. quotations; and manufacturers' value and trade margin.

Ice cream (1,120 million qt. at \$40)	448	Consumption: Census of Manufactures. Additional production (total estimated by B.A.E. at 95 million gal.) assumed to be covered by retail value of milk (see whole milk). Price: manufacturers' value, plus one-third.
<i>Other proteins and fats, total</i>	2,772	Manufacturers' value, adj. for imports, exports, changes in stocks, and trade margin (wholesale 12%, retail 25%).
Canned and cured fish and sea food	176	Consumption: Bureau of Fisheries (10 lb. per capita). Price: author's estimate.
Fresh fish and sea food (1,215 million lb. at \$.15)	182	Consumption: no. of chickens raised (Census of Agriculture) and assumed average dressed weight of 4 lb., adj. for increase in farm flocks, exports, imports, and increase in storage. Price: B.L.S. quotations and farm value, weighted for consumption on farms, in villages and cities.
Poultry	768	Computed from ratio of farm value to farm value of chickens sold.
Chickens (2,561 million lb. at \$.30)		Consumption: eggs produced on farms (Census of Agriculture), adj. for use in hatching, exports, imports, and increase in storage. Price: B.L.S. quotations and price received by farmers, weighted for consumption on farms, in villages and cities.
Other poultry	95	Consumption: B.A.I., adj. for bakery use. Price: B.L.S., B.A.E.
Eggs (2,532 million doz. at \$.38)	962	Consumption: Census of Manufactures, adj. for exports and bakery use. Price: estimated from ratio of manufacturers' value to that of lard.
Lard (1,457 million lb. at \$.18)	262	Consumption: withdrawals from storage, Commissioner of Internal Revenue. Price: B.L.S., B.H.E.
Shortenings and vegetable cooking oils (1,468 million lb. at \$.165)	242	Consumption: Census of Manufactures. Price: B.L.S., B.H.E., B.A.E. quotations.
Oleomargarine (353 million lb. at \$.24)	85	Consumption: Census of Manufactures, adj. for exports and trade margin (wholesale 12%, retail 25%).
<i>Cereals and bakery products, total</i>	2,626	Manufacturers' value, adj. for trade margin (retail 35%).
Bread, rolls, coffee cake (9,864 million lb. at \$.09)	888	
Biscuits, crackers, cookies, pretzels (1,387 million lb. at \$.26)	361	
Soft cake, pies, misc. bakery products	460	

TABLE 11—Cont.

	METHOD OF ESTIMATE
	Consumption: total consumption. Department of Commerce, adj. for use in bakeries and manufacturing. Price: B.L.S., B.H.E., B.A.F. quotations.
	Manufacturers' value, adj. for exports and trade margin (wholesale and retail, 40%).
	Manufacturers' value, adj. for trade margin (wholesale and retail, 40%).
	Consumption: Department of Commerce. Price: B.L.S., B.H.E., B.A.F. quotations.
	Manufacturers' value, adj. for exports, imports, and trade margin (wholesale 12%, retail 25%).
	Consumption: estimated at half the production during 1928 and 1929, adj. for net imports and non-human consumption (one-fifth of total). Price: B.L.S., B.A.F. quotations, weighted for consumption on farms, in villages and cities.
	Value of truck crops and of sweet potatoes sold by farmers, B.A.F., adj. for sales to canners and processors, and trade margin (100% of farm value).
	Value of farm gardens and of truck crops and sweet potatoes used by farm families, B.A.F., plus \$75 million for village gardens.
	Consumption: production of 1928, B.A.E., adj. for exports and imports. Price: B.L.S., B.H.E. retail quotations; B.L.S. wholesale quotations; auction prices and import values, B.A.E. Fruits incl. oranges, grapefruit, lemons, limes.
	Consumption: total consumption. Department of Commerce, adj. for use in bakeries and manufacturing. Price: B.L.S., B.H.E., B.A.F. quotations.
	Manufacturers' value, adj. for exports and trade margin (wholesale and retail, 40%).
	Manufacturers' value, adj. for trade margin (wholesale and retail, 40%).
	Consumption: Department of Commerce. Price: B.L.S., B.H.E., B.A.F. quotations.
	Manufacturers' value, adj. for exports, imports, and trade margin (wholesale 12%, retail 25%).
	Consumption: estimated at half the production during 1928 and 1929, adj. for net imports and non-human consumption (one-fifth of total). Price: B.L.S., B.A.F. quotations, weighted for consumption on farms, in villages and cities.
	Value of truck crops and of sweet potatoes sold by farmers, B.A.F., adj. for sales to canners and processors, and trade margin (100% of farm value).
	Value of farm gardens and of truck crops and sweet potatoes used by farm families, B.A.F., plus \$75 million for village gardens.
	Consumption: production of 1928, B.A.E., adj. for exports and imports. Price: B.L.S., B.H.E. retail quotations; B.L.S. wholesale quotations; auction prices and import values, B.A.E. Fruits incl. oranges, grapefruit, lemons, limes.
	Consumption: total consumption. Department of Commerce, adj. for use in bakeries and manufacturing. Price: B.L.S., B.H.E., B.A.F. quotations.
	Manufacturers' value, adj. for exports and trade margin (wholesale and retail, 40%).
	Manufacturers' value, adj. for trade margin (wholesale and retail, 40%).
	Consumption: Department of Commerce. Price: B.L.S., B.H.E., B.A.F. quotations.
	Manufacturers' value, adj. for exports, imports, and trade margin (wholesale 12%, retail 25%).
	Consumption: estimated at half the production during 1928 and 1929, adj. for net imports and non-human consumption (one-fifth of total). Price: B.L.S., B.A.F. quotations, weighted for consumption on farms, in villages and cities.
	Value of truck crops and of sweet potatoes sold by farmers, B.A.F., adj. for sales to canners and processors, and trade margin (100% of farm value).
	Value of farm gardens and of truck crops and sweet potatoes used by farm families, B.A.F., plus \$75 million for village gardens.
	Consumption: production of 1928, B.A.E., adj. for exports and imports. Price: B.L.S., B.H.E. retail quotations; B.L.S. wholesale quotations; auction prices and import values, B.A.E. Fruits incl. oranges, grapefruit, lemons, limes.

AGGREGATE

VALUE

(millions of dollars)

Cereals and bakery products, Cont.  
Wheat flour (54 million bbl. at \$9.00)

Corn meal and ground flour

Breakfast foods

Macaroni, spaghetti, vermicelli, noodles

Rice (701 million lb. at \$.09)

Vegetables, fruits, nuts, total  
Canned and dried vegetables

Irish potatoes (332 million bu. at \$1.35)

Other fresh vegetables purchased

Farm and village gardens

Citrus fruits

THREE ESTIMATES OF OUTPUT

345

Tropical and semi-tropical fruits (except citrus)	150	Consumption: net imports of bananas and pineapples and imports and production of dates and figs. Price of bananas, B.L.S., B.H.E., B.A.E. quotations. Value of other fruits estimated at twice the import value.
Other fresh fruits purchased	472	Estimated from farm cash income from all fruits, adj. for income from citrus fruits, exports, imports, sales to canners and other processors, and trade margin (100% of farm value).
Canned and dried fruits	212	Manufacturers' value, adj. for exports, imports, and trade margin (wholesale 12%, retail 25%).
Nuts	305	Consumption: Department of Commerce. Average retail price: 15¢ per lb. for peanuts, 40¢ for other nuts.
<i>Sugar, confectionery, condiments, non-alcoholic beverages, total</i>	3,037	Consumption: U. S. Beet Sugar Association, adj. for use in manufacturing (incl. illicit liquor production). Price: B.L.S., B.H.E., B.A.E. quotations.
Cane and beet sugar (9,160 million lb. at \$.065)	595	Incl. honey, maple sugar and syrup, sweetening syrups and molasses, desserts ready to mix, pie and cake fillings, prepared dessert powders, cane syrup, corn starch. Values of honey and maple sugar based on farm values and sales, plus trade margin; of other products, on manufacturers' values, plus trade margin (50%).
Other sugars, syrups, prepared desserts	148	Manufacturers' value, excl. salted nuts and incl. sweet and milk chocolate, adj. for exports, imports, and trade margin (wholesale 17%, retail 50%).
Confectionery	676	Manufacturers' value, adj. for exports, imports, and trade margin (wholesale 30%, retail 50%). Items incl.: carbonated beverages, cereal beverages, still beverages, grape juice, malted milk.
Soft drinks	443	Consumption: coffee, 1,161 million lb., amount roasted and ground, Census of Manufactures, adj. for imports and exports; tea, 88 million lb., net imports; coffee substitutes, 15 million lb., Department of Commerce. Price: coffee, \$43 per lb.; tea \$70 per lb., B.L.S., B.H.E., B.A.E. quotations; coffee substitutes, \$25 per lb. Value of powdered cocoa estimated at 50% above manufacturers' value.
Coffee, tea, cocoa, coffee substitutes	556	Manufacturers' value, adj. for sales to industrial consumers (salt), imports, exports, and trade margin (50%). Items incl.: salt, spices, flavoring extracts, chili pepper.
Condiments	215	

TABLE 11—Cont.

AGGREGATE VALUE (millions of dollars)	METHOD OF ESTIMATE
860	Manufacturers' value, adj. for trade margin (40%). Items incl.: canned pickles, sauces and salad dressing, canned preserves, jams, jellies, fruit butter, mincemeat.
74	Manufacturers' value, adj. for trade margin (25%). Items incl.: Italian, Spanish, and Mexican food preparations, 'health foods', misc. food products.
90	Manufacturers' value, adj. for trade margin (75%). Items incl.: yeast and baking powder; vinegar and cider, refined bicarbonate of soda, cream of tartar.
—1,323	Derived from estimate of total purchases of semi-manufactures by food manufacturers, less amounts deducted in estimates for specific items of food.
925	Gross margin of restaurants, estimated at 45% of value of meals sold, adj. for estimated proportion of food purchased at less than retail prices.
161	Estimated from no. not in hotels, restaurants, etc., Census of Occupations, and assumed average annual earnings of \$500.
22,356	Census of Families, 1930; cases where rent was not reported prorated among the various groups. Assumed that rentals re-
13,081	ported in April, 1930 were representative of the year 1939. More than half a million dwellings, with tenure unknown, omitted from this and the following estimates.
4,829	Census of Families; cases where value was not reported prorated among the various groups. Rental values in 1939 assumed to be 10% of the reported value of dwellings in April 1930.
6,338	Estimated at 10% of reported value of farm dwellings. Census of Agriculture.
708	

Sugar, confectionery, condiments, non-alcoholic  
beverages. Cont.

Pickles, preserves, jams, and jellies

Foreign and misc. food preparations

Cooking aids

Industrial use not allowed for in the separate items

Restaurant mark-up above retail value

Home preparation (professional cooks only)

HOME MAINTENANCE, TOTAL

Rentals, total

Rented nonfarm dwellings (12,352,000)

Rental value of owned nonfarm dwellings (10,503,000)

Rental value of farm dwellings (6,605,000)

Rooms in hotels	289	One-half of net receipts from rooms, Censuses of Hotels and of Retail Distribution.
Rooms in private and lodging houses (net)	746	Gross annual rental paid by lodgers estimated at \$800 per lodger, amounting to \$1,086 million. From this, \$85 per room deducted to cover proportion of house rental and other costs of home maintenance for lodgers in private dwellings (estimated at 4 million rooms).
Quarters furnished by institutions, army and navy	171	Estimated at \$100 for each resident of institution and each person in military and naval vessels, Census of Families.
<i>House equipment and decoration, total</i>	4,702	Manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (wholesale one-third, retail 60%).
Household furniture	1,011	
Operating equipment	317	Manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (wholesale 25%, retail 43%).
Cooking and heating	215	Manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (wholesale 27%, retail 82%).
Lighting	162	Two-thirds of value of domestic refrigerators, estimated from manufacturers' value, adj. for trade margin (wholesale and retail, 60%).
Refrigerating	172	Manufacturers' value, adj. for trade margin (wholesale and retail, 60%).
Sewing and washing machines	110	Manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (wholesale 29%, retail 82%).
Electrical appliances, not elsewhere included	761	Manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (wholesale 18%, retail 56%).
Pianos, phonographs, radios		
Furnishings and decorations	558	Manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (60-80%).
Floor coverings, draperies, curtains	396	
Mattresses, bed springs, bed linens, covering	509	
Kitchen and table ware, table coverings, etc.	254	
Towels, bathroom and misc. equipment	237	
Paints and varnishes		



TABLE 11—Cont.

	AGGREGATE VALUE (millions of dollars)	METHOD OF ESTIMATE
<i>Household supplies and operation, total Supplies</i>	4,573 665	
Fuel and light		Manufacturers' value, adj. for sales to industrial consumers and trade margin. Items incl.: mosquito netting, matches, paper napkins, toilet paper, waxed paper, tissue paper, cleaning and polishing preparations, blacking stains and dressing, bluing, borax, sal soda, household insecticides and disinfectants, household soaps, dyes, needles, pins, brooms, brushes.
Coal	795	Retail sales less: 20% allowance for sales to apartment houses, stores, and small industrial users.
Fuel, oil, wood, etc.	305	55% of refiners' sales of fuel oil, Census of Manufactures, adj. for trade margin, plus value of wood used by farmers, B.A.E.
Gas	546	American Gas Association.
Electricity	619	National Electric Light Association, <i>Electrical World</i> , January 2, 1932.
Illuminating oils and candles	304	Manufacturers' value, adj. for sales to industrial consumers and trade margin.
Water, ice, garbage removal		
Water	300	Three-fourths of estimated total water charges for domestic use. Total based on median domestic rates and median per capita consumption in 325 cities in 1925, <i>Municipal Index, 1926</i> , with 60% assumed to be domestic; and on revenue receipts of municipally operated water supply systems in 207 cities.
Ice	126	Manufacturers' value, adj. for sales to industrial consumers and trade margin.
Garbage removal, etc.	50	Arbitrary estimate, supported by frequency of item in family expenditure accounts.
Domestic service	863	No. of gainfully employed, Census of Occupations, and assumed average earnings: housekeepers and stewards, \$600; servants, \$150; laborers, \$600; laundresses and laundresses, \$350.

ATTIRE, TOTAL	19,669		
<i>Clothing and shoes, ready-to-wear, total</i>	8,582		Total value of clothing and shoes, ready-to-wear, estimated from manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (wholesale 16%, retail 50%).
Men's and youths' clothing	905		Values for various items estimated from ratio between manufacturers' value for each category to manufacturers' value for all clothing and shoes, ready-to-wear. The figure for each item is, of course, less reliable than the figure for all clothing and shoes, ready-to-wear, because of the varying proportion sold to industrial consumers, exported or imported, and varying trade margins.
Suits, trousers, coats, etc.	915		
Overcoats, raincoats, leather, sport clothing	256		
Work clothing, costumes, uniforms, misc. outer garments	689		
Shirts, neckwear, hosiery, handkerchiefs, garters, suspenders	218		
Underwear, nightwear, bathrobes, lounging garments	200		
Headwear	594		
Footwear (excl. rubber)		1,397	
Women's and misses' clothing		756	
Dresses, suits, ensembles, shirts, blouses, daytime pajamas		53	
Coats and raincoats		699	
Smocks, aprons, uniforms		458	
Hosiery, garters, scarfs, neckwear, handkerchiefs		324	
Underwear, nightwear, corsets, bathrobes, kimonos		751	
Headwear		236	
Footwear (excl. rubber)		114	
Clothing, not classified by sex		181	
Sweaters, bathing suits, belts, misc. knit goods		476	
Gloves and mittens			
Footwear, chiefly rubber			
Children's and infants' clothing			
<i>Clothing materials and making, total</i>	2,272		Total value of materials (cotton, silk, rayon, woolen, misc. items) estimated from manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (wholesale 20%, retail 35%). Values for the various items estimated from ratio of manufacturers' value for each category to manufacturers' value for the total.
Cotton goods	612		
Silk and rayon goods	691		
Woolen goods	435		
Misc. items	269		

TABLE 11—Cont.

AGGREGATE VALUE (millions of dollars)	METHOD OF ESTIMATE
865	Estimated from no. engaged, Census of Occupations, and assumed average earnings: dressmakers and seamstresses (not in factory), \$800; milliners and millinery dealers, \$800; dressmakers and milliners' apprentices, \$500; tailors and tailoresses (half of total no.), \$1,800.
730	Manufacturers' value, adj. for sales to industrial consumers, imports, exports, and trade margin (wholesale and retail, 85%).
382	Manufacturers' value, adj. for sales to industrial consumers, imports, exports, and trade margin (wholesale and retail, 85%).
348	Census of Manufactures, excl. commercial work, with a small adjustment for margin on business done on wholesale basis and tailor shops not covered by the Census.
958	Estimated from no. of shoemakers and cobblers not in factories, Census of Occupations, and assumed average earnings, incl. materials supplied and overhead costs, of \$1,200.
793	Estimated from no. of jewelers and watchmakers not in factories, Census of Occupations, and apprentices, and assumed average earnings, incl. materials supplied and overhead costs, of \$1,500 for jewelers and watchmakers, and \$500 for apprentices.
98	Manufacturers' value, adj. for sales to industrial consumers, and trade margin (wholesale and retail, 75%).
41	Total compensation of employees and entrepreneurs, <i>National Income, 1929-32</i> , increased 10% for overhead costs.
98	
1,127	
591	

*Clothing materials and making, Cont.*  
Services of dressmakers, milliners, tailors

*Jewelry and other articles of apparel, total*  
Precious stones and jewelry

Watches, pocketbooks, umbrellas, canes, etc.

*Care of clothing and apparel, total*  
Dry cleaning, laundry, pressing

Shoe repairing

Jewelry and watch repairing

Luggage

PERSONAL CARE, TOTAL.

Barbering and hairdressing

Cosmetics, perfumes, misc. toilet preparations	399	Manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (wholesale 35%, retail 43%).
Toilet soaps, combs, razors, blades, etc.	197	Manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (wholesale 35%, retail 43%).
TRANSPORTATION, TOTAL.	8,192	
<i>Vehicles purchased, total</i>	2,203	Two-thirds of new passenger car sales, estimated from sales of automobile sales rooms, Census of Retail Distribution, state reports, and sales of wholesale trade at retail, Census of Wholesale Distribution, U. S. Summary.
Automobiles	2,160	
Other vehicles	49	Manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (80%). Items incl.: aircraft, carriages, buggies and sulkeys, sleighs and bobs, bicycles, motor cycles, motor boats under 5 tons, sailboats, rowboats, canoes.
<i>Maintenance of motor vehicles, total</i>	3,276	Half of cost of gasoline, estimated from (a) consumption by motor vehicles, 14,177 million gal., Bureau of Public Roads estimate.
Gasoline	1,485	(b) average retail price of 17.9¢ a gal. without tax, American Petroleum Institute, (c) state gasoline taxes, \$43.1 million.
Oils and greases	208	Estimated at 16.4% of cost of gasoline, excl. tax, Census of Retail Distribution, U. S. Summary, percentage sales of filling stations.
Tires, tubes, accessories	603	Census of Manufactures, adj. for sales to industrial consumers and trade margin (wholesale one-third, retail 43%); half of total incl.
Repairs and storage	454	Half of receipts from automotive repairs and storage, Census of Retail Distribution, U. S. Summary.
Taxes and registration fees	248	Half of registration fees, personal property and municipal taxes, National Automobile Chamber of Commerce.
Insurance	278	Half of total cost of automobile insurance, National Automobile Chamber of Commerce.
<i>Common carrier transportation, total</i>	1,987	Half of passenger revenue, Railway Statistics, I.C.C.
Steam railroads (incl. Pullman)	479	Nine-tenths of passenger revenue, American Transit Association, <i>Transit Journal</i> , January 1933.
Electric railways	816	Four-fifths of passenger revenue, National Association of Motor Bus Operators, <i>Bus Facts for 1931</i> .
Motor buses	316	

TABLE 11--Cont.

	AGGREGATE VALUE (millions of dollars)	METHOD OF ESTIMATE
<i>Common carrier transportation, Cont.</i>		
Taxicabs	863	Three-fourths of estimated gross revenue; based on an estimate of 100,000 taxicabs in operation, reports of National Automobile Chamber of Commerce as to no. in leading cities, and an assumed average gross income, incl. tips, of \$3,500 per car per year.
Coastal and inland waterways	106	No. of passengers carried, at an assumed average fare of 5¢ for ferries and \$1.00 for excursion and regular passengers. Annual reports of the Chief of Engineers, U. S. Army, to the Secretary of War.
Airways	7	Half of passenger revenue, estimated from no. of passengers carried and fares paid, adj. for passengers carried in 'misc. flying operations'. <i>Air Commerce Bulletin</i> , May 1, 1933.
Maintenance of highways and streets	456	Half of total cost, U. S. Department of Commerce, Bureau of the Census, <i>Financial Statistics of States, 1929</i> , and <i>Financial Statistics of Cities, 1929</i> ; and estimate of expenditures by places under 30,000 population based on reports of 8 states.
Moving and expressage	200	Fragmentary data: volume of business of chief long distance moving concerns and traffic surveys covering movement of household goods.
COMMUNICATION, TOTAL.	935	
Correspondence	290	Two-thirds of retail sales, estimated from manufacturers' value, adj. for sales to industrial consumers and trade margin (wholesale one-third, retail 61%). Items incl.: writing paper, envelopes, ink, stationery goods, pencils, pens, portable typewriters.
Postal service	200	One-third of postal revenue from stamps, postal cards, etc., box rents, and money orders.
Telephone service	403	One-third of operating revenue of all telephone companies (total operating revenue estimated by American Telephone and Telegraph Company).
Telegraph, cable, wireless	42	One-fifth of operating revenue (total operating revenue from <i>Statistical Abstract of the United States</i> ).

HEALTH AND MEDICAL CARE, TOTAL		
Physicians and surgeons	3,556	Maurice Leven, <i>The Incomes of Physicians</i> (U. of Chicago Press, 1932), p. 108.
Dentists	1,090	Maurice Leven, <i>The Practice of Dentistry and the Incomes of Dentists in Twenty States</i> (U. of Chicago Press, 1932), p. 201.
Other curative professions and semi-professions	445	Committee on the Cost of Medical Care, <i>Medical Care for the American People</i> (U. of Chicago Press, 1932), p. 14.
Nurses on private duty	193	Manufacturers' value, adj. for sales to industrial consumers and trade margin (wholesale one-third, retail 43%). Items incl.: optical goods, surgical appliances (artificial limbs, etc.), heating pads, vibrators, household health lamps, rubber goods (druggists and medical sundries).
Hospital and laboratory service	202	Committee on the Cost of Medical Care, <i>The Costs of Medicines</i> (U. of Chicago Press, 1932) p. 18, excl. medicines distributed by physicians, hospitals, and dispensaries.
Public health and organized medical services	659	
Health goods and appliances	150	
	152	
Drugs and medicines	665	
PROTECTIVE AND CIVIL SERVICES, TOTAL	1,652	
Administration of government	522	Half of total cost. W. F. Willoughby, <i>Financial Condition and Operations of the National Government, 1921-1930</i> (Brookings Institution, 1931); <i>Financial Statistics of States; Financial Statistics of Cities</i> ; and an estimate for places under 30,000 population based on reports of 8 states.
Protection (military and police)	553	One-fourth of total cost: same sources as for administration of government.
Sanitation	140	Three-fourths of total cost: same sources as for administration of government; and Committee on the Cost of Medical Care, <i>Medical Care for the American People</i> , p. 14.
Mortuary services	300	Based on the no. of deaths and cost of funerals among various classes of the population. J. C. Gebhart, <i>Funeral Cost</i> (Putnam, 1928), adj. for expenses, such as flowers, included elsewhere.
Fees, fines, legal services	137	Incl.: marriage licenses and fees to ministers; costs of divorce; consular and passport fees, judicial, patent and copyright fees (10%); court and customs fines (20%); legal services (estimated as services of 10% of the legal profession at an average income of \$5,000).

TABLE 11—Cont.

	METHOD OF ESTIMATE
AGGREGATE VALUE (millions of dollars)	
EDUCATION AND READING, TOTAL	3,626
Elementary and high schools	2,131
Universities and professional schools	441
Other schools	118
Libraries and extension work	268
Purchase of books	191
Newspapers and periodicals	477
SOCIAL ORGANIZATIONS, TOTAL	1,458
Religious bodies	750
Labor and professional organizations	200
Fraternal orders	175
Social, athletic, luncheon clubs	133
Settlement houses, community activities, youth service	100
Propagandist and misc. social organizations	100
RECREATION AND ART GOODS, TOTAL	3,658
Moving pictures	1,250
Legitimate theatres	250

Office of Education, Department of the Interior, *Biennial Survey of Education, 1928-30*, Bulletin 20, II, 11.  
 Estimated from government expenditures (same sources as for administration of government).

Three-fourths of total sales, estimated from manufacturers' value and trade margin (wholesale 43%, retail 54%).

Estimated from contributions in 1926, *Census of Religious Bodies*, and increase from 1926 to 1929 in the contributions of 34 Protestant denominations, *Recent Social Trends* (New York, 1933), II, 1030, adj. for cost of religious buildings erected.

Crude estimate based on fragmentary data regarding membership and dues of trade unions and professional societies.

J. F. Steiner, *Americans at Play* (McGraw-Hill, 1933), p. 183.

Crude estimate; see Steiner, *Americans at Play*, for expenditures of leading youth service organizations.

Crude allowance for organizations not incl. elsewhere.

Department of Commerce, *National Income, 1929-32*, p. 144.

Other commercial amusements	450	Estimated from ratio of receipts of corporations engaged in 'other amusements' to receipts of incorporated theatres, <i>National Income, 1929-32</i> , p. 290.
Sporting goods, games, and toys	444	Manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (wholesale one-third, retail two-thirds). Items incl.: sporting and athletic goods, fireworks, firearms, ammunition, fish lines, telescopes, field and opera glasses, children's carriages and sleds, games, toys, and novelties.
Music and art goods	126	Manufacturers' value, adj. for sales to industrial consumers, exports, imports, and trade margin (wholesale 41%, retail 43%).
Cut flowers and plants	200	Sales of florists. Census of Retail Distribution, with slight adjustment for sales of street vendors, etc., omitted from Retail Census.
Camps, hunting and fishing licenses, admission to parks, tourist lodgings (excl. hotels)	100	Expenditures for camps and hunting and fishing licenses from Steiner, <i>Americans at Play</i> , p. 189. Remainder a crude allowance for tourist lodging and recreation expenditures not incl. elsewhere.
Tourist travel abroad (net)	638	Excess of American tourist expenditures abroad over foreign tourist expenditures in the U. S. (the latter being presumably incl. in various items), A. E. Taylor, <i>The Balance of International Payments of the United States in 1932</i> (U. S. Department of Commerce).
Monuments (incl. tombstones)	72	Manufacturers' value, adj. for trade margin.
Government expenditures for recreation	128	Same as for administration of government, above.
STIMULANTS, TOTAL	6,290	
Alcoholic beverages	3,750	Modification of estimate in Warburton, <i>The Economic Results of Prohibition</i> (Columbia U. Press, 1932).
Tobacco	2,539	Sales by wholesalers and manufacturers' sales to retailers, adj. for trade margin (25%).



TABLE 11—Cont.

AGGREGATE  
VALUE  
(millions of  
dollars)

## METHOD OF ESTIMATE

Narcotics (non-medicinal)	25	Based on an estimate that there are more than 100,000 non-medical addicts (conversations with officials of the Bureau of Narcotics) who spend an average of \$250 a year.
Chewing gum	126	Sales of wholesalers, Census of Distribution, adj. for retail trade margin (25%).

<sup>1</sup> Trade margins are expressed as percentages of manufacturers' value, or of cost to wholesalers and retailers, respectively, and are derived chiefly from ratios of total expenses to net sales, adjusted for estimated profit margins, reported by the Census of Distribution. Adjustments have also been made for the percentage of each group of products sold by manufacturers to consumers, to retailers, and through wholesale organizations as given in the report by the Bureau of the Census, *Distribution of Sales of Manufacturing Plants*.

For some items, unpublished material made available through the courtesy of government and trade association officials has been used. Many of the prices used in the food estimates are weighted averages computed by the author from data obtained from various sources. Some of the figures, including the proportions of transportation outlays assigned to consumers and to business concerns, represent the judgment of the author after consideration of fragmentary data from various sources and consultation with informed persons in government departments or business concerns.

B.A.E.: Bureau of Agricultural Economics.

B.A.I.: Bureau of Animal Industry.

B.H.E.: Bureau of Home Economics.

B.L.S.: Bureau of Labor Statistics.

TABLE 12

COMMODITY-SERVICE CLASSIFICATION OF WARBURTON'S ESTIMATES OF THE VALUE OF CONSUMERS' GOODS, 1989  
(millions of dollars)

	TOTAL COMMODITIES	PERISHABLE COMMODITIES	SEMI-DURABLE AND DURABLE COMMODITIES	TOTAL SERVICES	GOVERNMENT SERVICES 1	OTHER SERVICES
<i>All Consumers' Goods and Services</i>	85,317	32,290	20,011	33,016	4,868	28,148
<i>Food and non-alcoholic beverages, total</i>	20,055	19,894		161		161
Total, excl. home preparation	19,894	19,894		161		161
Home preparation (professional cooks)	161					
<i>Home maintenance, total</i>	22,356	2,195	4,702	15,459	152	15,307
Dwelling rentals (incl. imputed value)	11,875			11,875		11,875
Room rentals and institutional living quarters	1,206			1,206		1,206
Home equipment and decoration	4,702		4,702		152	1,054
Household supplies and operation						
Supplies	665	665				
Fuel and light, excl. gas and electricity	1,404	1,404				
Gas and electricity 2	1,165			1,165		1,165
Ice	126	126				
Water and garbage removal 2	350			350		350
Domestic service	863			863		863
<i>Attire, total</i>	13,669	490	11,451	1,722		1,722
Clothing and shoes, ready-to-wear	8,582		8,582			
Clothing materials and making						
Materials	2,007		2,007			

TABLE 12—Cont.

	TOTAL	TOTAL COMMODITIES	PERISHABLE COMMODITIES	SEMI-DURABLE AND DURABLE COMMODITIES	TOTAL SERVICES	GOVERNMENT SERVICES 1	OTHER SERVICES
<i>Attire, Cont.</i>							
Dressmakers, milliners, and tailors	865				865		865
Jewelry and other articles of apparel	730	730		730			
Care of clothing and apparel							
Dry cleaning, laundry, and pressing	733				733		733
Shoe, jewelry, and watch repairing	133				133		133
Luggage	92	92		92			
Personal care							
Barbering and hairdressing	591				591		591
Cosmetics, perfumes, and misc. toilet preparations	339	339	339				
Toilet soaps, combs, razors, blades, etc. <sup>2</sup>	197	197	157	40			
<i>Transportation, total</i>							
Vehicles purchased	8,122	4,499	1,693	2,806	3,423	456	3,167
Maintenance of motor vehicles	2,803	2,803		2,803			
Gasoline, oils, and greases	1,693	1,693	1,693				
Tires, tubes, and accessories	603	603		603			
Repairs and storage, taxes and registration fees, insurance	980						
Common carrier transportation	1,987				980		980
Maintenance of highways and streets	456				1,987		1,987
Moving and expressage	800				456	456	800

THREE ESTIMATES OF OUTPUT

<i>Communication, total</i>	935	290	200	645	645
Correspondence supplies	290	290			
Postal, telephone, and telegraph service	645			645	645
<i>Health and medical care, total</i>	3,556	817	665	2,739	2,739
Physicians, surgeons, other curative professions, and nurses	1,930		152	1,930	1,930
Hospital and laboratory service, public health and organized medical services	809			809	410
Health goods and appliances	152	152			
Drugs and medicines	665	665			399
<i>Protective and civil services, total</i>	1,652	150	150	1,502	287
Government, administration, protection, and sanitation	1,215			1,215	
Mortuary services <sup>4</sup>	300	150	150	150	150
Fees, fines, and legal services	137			137	137
<i>Education and reading matter, total</i>	3,626	735	477	2,891	384
Schools and universities	2,690			2,690	384
Libraries and extension work <sup>5</sup>	268	67		261	
Purchase of books	191	191			
Newspapers and periodicals	477	477			
<i>Social organizations</i>	1,458			1,458	1,458
<i>Recreation and art goods, total</i>	3,658	842	200	2,816	2,688
Moving pictures, theatres, and other commercial amusements	1,950			1,950	
Sporting goods, games, and toys	444	444			1,950

TABLE 12--Cont.

	TOTAL COMMODITIES	PERISHABLE COMMODITIES	SEMI-DURABLE AND DURABLE COMMODITIES	TOTAL SERVICES	GOVERNMENT SERVICES 1	OTHER SERVICES
<i>Recreation and art goods, Cont.</i>						
Music and art goods	126					
Cut flowers and plants	200	200	126			
Camps, licenses, parks, etc.	100			100		100
Tourist travel abroad (net) 2	698			698		698
Monuments (incl. tombstones)	72		72			
Government expenditures for recreation	128			128	128	
<i>Stimulants</i>	6,230	6,230				

1 Taxes collected from individuals are estimated at \$1,812 million; the estimated value of government services to individuals exceeds the taxes collected from them by \$3,056 million.

2 Gas, electricity, and water should perhaps be classified as commodities. They are included with services to conform with Kuznets' classification.

3 Allocated  $\frac{4}{5}$  to perishable,  $\frac{1}{5}$  to semidurable and durable commodities.

4 Allocated  $\frac{1}{2}$  to perishable commodities,  $\frac{1}{2}$  to services.

5 Allocated  $\frac{1}{4}$  to semidurable and durable commodities,  $\frac{3}{4}$  to services.

6 Should perhaps be partly classified as commodities.



TABLE 13—Cont.

## WARRBURTON'S MAJOR CONSUMPTION CATEGORIES

	Food and Non-Al- coholic Bever- ages	Home Maintenance	Trans- por- tation	Com- muni- cation	Protec- tive and Health and Medi- cal Care	Edu- cation and Social Read- ing	Recrea- tion and Art Goods	Stim- ulants
<b>TOTAL</b>								
(LOUGH) <sup>1</sup>								
LOUGH'S CATEGORIES								
<i>Home maintenance, Cont.</i>								
Musical instruments other than pianos, phonographs, and radios	27							27
Flowers, plants, and seeds	275							275
Laundry and dry cleaning	600		600					
Moving expenses	100			100				
Telephone	550				550			
<i>Sickness and death</i>	3,153							
Total, excl. following 2 items	2,904				2,904			
Caskets and funeral supplies	172							172
Undertakers	77							77
<i>Personal appearance</i>	1,680							
Total, excl. photographers	1,629		1,629					
Photographers	51							51
<i>Recreation</i>	4,663							
Total, excl. following 3 items	3,133							3,133
Trunks and leather goods	91		91					
Hotels, etc.	800							
Railroad and Pullman fares	699			699				

<i>Social-cultural activities</i>	4,764				
Artists' materials	11				11
Books, newspapers and periodicals	804			804	
Envelopes, glue, ink, mucilage, paper	352		352		
Paper goods	105		105		
Pencils, pens, stationery, typewriters	139		139		
Tuition privately paid	550				550
Postage	350		350		
Fraternal, civic, union, and grange dues	470				470
Artists, sculptors, teachers of art	57				57
Musicians and music teachers	73				73
Lawyers	141			141	
Church and charity	1,500				1,500
Immigrant remittances	212				212
<i>Direct taxes</i>	1,246				1,246*

1 *High-Level Consumption*, pp. 236-46. Grand total excludes savings.

\* Allocated to 'protective and civil services' and 'education and reading' jointly.



TABLE 14  
 COMMODITY-SERVICE CLASSIFICATION OF LOUGHS ESTIMATES OF CONSUMERS' SPENDING, 1929  
 (millions of dollars)

	COMMODITIES AND SERVICES CLASSIFIED BY WARBERTON'S MAJOR CATEGORIES									
	TOTAL COMMODITIES OR SERVICES	PERISHABLE COMMODITIES	SEMI-DURABLE AND DURABLE COMMODITIES	FOOD AND NON-ALCOHOLIC BEVERAGES	HOME MAINTENANCE	TRANSPORTATION	HEALTH AND MEDICAL CARE	EDUCATION AND READING	SOCIAL AND RECREATION	STIMULANTS
Total Consumers' Spending	80,070	29,259	10,084	19,513	22,218	9,209	1,391	2,904	3,120	3,497
Commodities, total	49,243	29,259	10,084	19,513	7,012	12,553	491	731	976	3,789
Food and soft drinks	19,614	19,614		19,513						3,789
Alcoholic beverages and tobacco	3,688	3,688								101
Clothing	9,518		9,518							3,688
Transportation <sup>1</sup>	5,530	1,501	4,029		9,518	5,530				
Home maintenance <sup>2</sup>	7,209	2,186	5,073		6,907					302
Sickness and death <sup>3</sup>	993	765	138				731	172		
Personal appearance <sup>4</sup>	914	554	360		914					365
Recreation	456		456		91					11
Social-cultural activities <sup>5</sup>	1,411	1,001	410		105			804		11
Service (intangible), total	30,827				15,206	3,679	491	2,173	2,144	2,819
Clothing	409		409							
Transportation	2,040		2,040			2,940				
Home maintenance	15,656		15,656		14,406	1,000	550			
Sickness and death	2,250		2,250		600					
Personal appearance	766		766		715			2,173	77	
Recreation	4,207		4,207		800	639				51
Social-cultural activities	3,353		3,353				350	821	2,182	2,768
Direct taxes	1,246		1,246					1,246		

<sup>1</sup> High-Level Consumption, pp. 256-46.

<sup>2</sup> Gasoline and oil classified as perishable, other items as semidurable and durable.

<sup>3</sup> Part of household supplies (soap, matches, etc.), coal, wood, and ice, flowers, plants, and seeds, and extra-commercial consumption classified as perishable; other items as semidurable and durable.

<sup>4</sup> Caskets and funeral supplies, druggists' preparations and patent medicines classified as perishable; optical goods, rubber goods, and surgical appliances and supplies as semidurable and durable.

<sup>5</sup> Perfumes and cosmetics, razors and blades, and soap classified as perishable; brushes, jewelry, and watches as semidurable and durable. Typewriters and half of books, newspapers, and periodicals classified as semidurable and durable; other items as perishable.



TABLE 15—Cont.

## WARBURTON'S MAJOR CONSUMPTION CATEGORIES

KUZNETS' CATEGORIES Perishable commodities—Cont. 292, 295 Adjustment for change in inventories of wholesalers and retailers	WARBURTON'S MAJOR CONSUMPTION CATEGORIES							
	Food and Non-Alco- holic Bever- ages	Home Mainte- nance	Trans- por- tation	Com- muni- cation	Health and Medi- cal Care	Pro- tec- tive and Civil Services	Edu- cation and Read- ing Organi- zations	Recre- ation and Art Stimu- lants
	—80	—80						
<i>Semidurable commodities, total</i>	12,382	879	10,307	735				472
7 • Dry goods and notions	1,577	132	1,445					
9 Clothing and furnishings, men's and boys'	2,836		2,836					
10a Clothing, women's, misses', and children's	3,895		3,895					
10b Furs and fur goods	252		252					
11 Shoes and other footwear	1,745		1,745					
12 Misc. house furnishings	747			747				
13 Toys, games, and sporting goods	472							472
14 Tires and tubes	725							
293, 295 Adjustment for change in inventories of wholesalers and retailers	+134		+134	725				
<i>Consumers' durable commodities, total</i>	9,913	4,419	713	4,183	128		284	187
15 Household furniture	1,127	1,127						
16 Stoves, ranges, and water heaters	865							

17a	Washing machines, sewing machines, etc.	234	234	
17b	Domestic refrigerators, mechanical	214	214	
18	House furnishings (durable)	939	939	
19	China and household utensils	542	542	
20	Portable household electrical appliances, etc.	180	180	
21	Radio apparatus and equipment	674	674	
22*	Musical instruments	205	121	84
23*	Jewelry, silverware, clocks, and watches	737	144	593
24	Printing and publishing: books	284		284
25	Luggage	120	120	
26	Passenger cars	3,391	3,391	
27	Auto parts and accessories	737	737	
28	Motorcycles, bicycles, and accessories	25	25	
29	Pleasure craft	30	30	
30	Ophthalmic products and surgical and orthopedic appliances	128		128
31	Monuments and tombstones	103		103
293, 296	Adjustment for change in inventories of wholesalers and retailers			
		—121	—121	

1 *Commodity Flow and Capital Formation, Volume One*, p. 212 (minor commodity groups) and p. 478 (group totals). Servicing of consumers' durable goods excluded.

2 Primarily food, though a small part is the value of fuel and should be allocated to home maintenance.

TABLE 16  
 METHOD OF ALLOCATION OF KUZNETS' MINOR COMMODITY GROUPS TO WARBURTON'S MAJOR CONSUMPTION CATEGORIES, 1929

MINOR COMMODITY GROUP	PAGE REFERENCE	INDUSTRY NUMBERS	ITEM	PER-CENTAGE RATIO	ALLOCATION OF MANUFACTURER'S VALUES (NOT ITALICIZED); COST TO CONSUMER (ITALICIZED)		Health Edu- cation and tion and and and Read. Art Stimu- ing Goods bars
					PRODUCER'S TOTAL VALUE TO COST	TO CONSUMER	
1	80	108	Chewing gum				
	80	119	Mfd. ice				
3	212		Cost to consumer		115.8		58.6
	81	601	Alcohol ethyl and dis- tilled liquors				
	81	604-09	Cleaning and polishing preparations, etc.				21.4
	81	611, 627	Medicinal preparations		126.5		
	81	628, 631, 1103	Soap, cosmetics, etc.				413.6
	81	1645	Bandages, etc.			490.6	
	134		Rubber sundries			15.7	44.5
	142		Net foreign trade <sup>2</sup>			-18.2	-18.2
	212		Total manufacturers' values			126.5	461.3
			Cost to consumer			210.5	767.5
						68.0	1791.4
						17976.2	170.3

4	81	401-06.408	Converted paper prod- ucts	141.4	70.7	
	81	107.504-06	Writing paper, greeting cards		84.1	
	81	501	Bookbinding, etc.			38.9
	81	508-10	Newspapers and period- icals			460.3
	"	"	Music			16.5
	"	"	Paper patterns			
	"	"	Commercial printing			
	81	619.621,802	Ink, paste, erasers, etc.		19.9	
	81	1609,1612	Artists' materials, etc.		13.4	
	81	1633,1634, 1643	Pencils, pens, stationery goods			17.7
	1,12		Net foreign trade 2		103.8	-14.0
					-9.4	
	212		Total manufacturers' values	141.4	282.6	485.2
	82		Cost to consumer	275.2	470.1	738.5
51	82	704-05	Lubricating oils and greases			
	82	"	Gasoline		107.6	
	82		Remainder of Group 5a	261.6	949.4	
	1,12		Net foreign trade 2		-76.8	
	212		Total manufacturers' values	261.6	980.2	
			Cost to consumer	461.4	1728.7	
	82	216	Osnaburgs, sheetings	79.1		
7			Cost to consumer	132.1	1445.1	
				59.9	1577.2	

TABLE 16—Cont.

MINOR COM- MODITY GROUP	PAGE REFER- ENCE 1 NUMBERS	INDUSTRY NUMBERS	ITEM	PER- CENTAGE RATIO	ALLOCATION OF MANUFACTURER'S VALUES (NOT ITALICIZED); COST TO CONSUMER (ITALICIZED)			Health Edu. Recrea- tion and cation tion and and Read- ing Goods Inants
					PRO- DUCER'S TOTAL VALUE TO COST	Food and Non- Alco- holic	Home Main- tenance	
22	87 87	1627-30 "	Pianos, organs Wind, stringed and per- cussion instruments, music rolls, etc.				49.5	
	87 88	1635 "	Phonographs Phonograph records and parts				20.8	14.1
	181 142		Phonograph needles Net foreign trade					34.1 2.0 -3.4
	212		Total manufacturers' values	55.5	205.0			46.6
23	88	1213-14	Plated wear, silversmith- ing, and silverware					84.3
	212		COST TO CONSUMER	54.6	736.9			144.7 502.8

1 Kuznets, *Commodity Flow and Capital Formation, Volume One*.

2 Net foreign trade allocated arbitrarily after inspection of figures reported in *Statistical Abstract of the United States*.

TABLE 17

WARBURTON'S ESTIMATES OF THE VALUE OF OUTPUT OF CAPITAL GOODS, 1929  
(from unpublished manuscript)

	AGGREGATE VALUE (millions of dollars)	METHOD OF ESTIMATE <sup>1</sup>
<i>Gross, before Allowance for Depreciation</i>	17,808	
<i>Net, after Allowance for Depreciation</i>	9,733	
RESIDENTIAL BUILDINGS, TOTAL	3,508	
Apartments and hotels	933	
1- and 2-family houses	1,206	
Small projects	1,184	F. W. Dodge Corporation
Farm dwellings	185	Half of total, Dodge B.A.E.
PUBLIC AND SEMI-PUBLIC STRUCTURES, TOTAL	2,714	
<i>Buildings, total</i>	960	
Educational	419	
Hospital and institutional	167	
Public: courts, jails, offices, etc.	130	Construction in 37 states, Dodge, increased 17.2% on basis of estimate for all non-residential construction in 37 states and in the nation.
Religious and memorial	115	
Social, recreational, misc. small contracts	135	Excess of Dodge estimate over Census of Construction estimate of social and recreational buildings, plus 5% of small contracts, Dodge.
<i>Highways and streets, total</i>	1,333	
States	533	<i>Financial Statistics of States, 1929, Federal aid incl.</i>
Cities over 30,000 population	380	<i>Financial Statistics of Cities, 1929.</i>
Other local governments	420	Estimated on basis of total expenditures on streets and roads by local governments (except cities over 30,000 population) in 8 states and ratio of outlays to maintenance in 2 states and in cities over 30,000 population.



TABLE 17—Cont.

AGGREGATE VALUE (millions of dollars)	METHOD OF ESTIMATE. <sup>1</sup>
421	Willoughby, <i>Financial Condition and Operations of the National Government, 1927-1930</i> , p. 158. Items incl.: rivers and harbors, Mississippi flood control, Muscle Shoals Dam. Figure is half of total for 1928-29 and 1929-30.
91	Census of Construction.
100	Census of Construction (half of total).
72	Census of Construction.
20	<i>Annual Report, Comptroller, City of New York, 1932.</i>
4	Arbitrary allowance for misc. public works not done by contract, and not incl. elsewhere. Total is probably larger than this allowance.
84	
50	
5-472	Dodge, <i>The Prospects for Building in 1931</i> , 15% of small projects incl.
2,104	
1,106	Bureau of Railway Economics, Special Series No. 59, <i>Railway Supplies and Capital Expenditures</i> , roadway and structures incl.
532	Federal Employment Stabilization Board, excl. New York City subways.
5	Census of Construction.
72	Assumed to be same as in 1930, Federal Employment Stabilization Board.
475	Census of Construction.
22	Federal Employment Stabilization Board. Assumed to be same as 1930, Federal Employment Stabilization Board.
1,649	
795	
197	
600	
57	
<i>Other public works, total</i>	
Federal expenditures: rivers, dams, harbors	
Sewage and refuse disposal and drainage	
Water supply	
Docks, piers, and retaining walls	
Parks, grounds, etc.	
Rapid transit lines, New York City	
Allowance for omissions	
BUSINESS STRUCTURES, TOTAL.	
<i>Commercial and industrial buildings</i>	
<i>Transportation structures, total</i>	
Class I railroads	
Electric railways	
Subway work	
Pipe lines	
Air transport	
<i>Public utility structures, total</i>	
Electric power companies	
Gas companies	
Telephone companies	
Telegraph companies	

<i>Agricultural improvements</i>	278	B. A. E.
<i>Misc. building and engineering construction</i>	335	Census of Construction: items incl.: social and recreational buildings, rail and water transportation buildings (half), misc. buildings, dock, pier, and retaining wall (half), flood control and irrigation (half), radio tower, misc. public works and utilities, misc. construction.
MACHINERY AND EQUIPMENT, TOTAL	5,718	
<i>Transportation machinery and equipment, total</i>	2,296	One-third of new passenger car sales, estimated from sales of automobile salesrooms, Census of Retail Distribution, state reports, and sales of wholesale trade at retail, Census of Wholesale Distribution, U. S. summary.
Passenger automobiles for business use	1,079	Census of Manufactures, adj. for exports and trade margin (20%). <i>Railway Supplies and Capital Expenditures</i> , Bureau of Railway Economics, Special Series No. 53.
Trucks, busses, chassis, trailers	570	<i>Electric Railway Journal</i> , January 1930: incl. cars and trolley line materials.
Steam railroad equipment	321	Manufacturers' value, excl. motorboats under 5 tons, sailboats, rowboats, canoes.
Electric railway equipment	29	Manufacturers' value, adj. for sales to consumers, exports, and trade margin (20%). Items incl.: aircraft, farm wagons, trucks and business wagons, wheelbarrows, hand and push carts, motorcycles and bicycles.
Ship and boat building	92	Manufacturers' value, adj. for exports and trade margin (20%). Items incl.: cranes, conveying and elevating machinery, industrial cars and trucks.
Other transportation equipment, outdoor	68	Manufacturers' value, adj. for exports and trade margin (20%). Items incl.: control apparatus, generators, transformers, measuring instruments, searchlights and floodlights, rectifying apparatus, stationary motors.
Other transportation equipment, indoor	137	Manufacturers' value, adj. for exports and trade margin (20%).
<i>Electric and power equipment, total</i>	1,432	Manufacturers' value, adj. for exports and trade margin (20%).
Electric machinery, transmission devices and apparatus	435	Items incl.: engines, tractors and waterwheels, windmills and windmill towers, mechanical stokers, transmission machinery.
Telephone and telegraph apparatus	188	
Power generating apparatus, except electric, automotive, and locomotive	509	

TABLE 17—Cont.

	AGGREGATE VALUE (millions of dollars) 1-1917	METHOD OF ESTIMATE. 1
<i>Industrial machinery and equipment, total</i>		
Food, beverage, refrigerating	119	Manufacturers' value, adj. for exports, imports, and trade margin (20%), and dairy, cheese, and butter machinery incl. in farm machinery. Items incl.: bakers, bottling, canning, coffee roasting, confectionery and ice cream, flour mill, oil mill, packing house, refrigerating (except domestic), sugar mill machinery.
Textile, clothing, laundry	180	Manufacturers' value, adj. for exports, imports, and trade margin (5%). Items incl.: cotton gins, clothing, pressing, and hatmaking machinery; laundry, shoe, and textile machinery; industrial sewing machines.
Construction and excavating machinery	71	Manufacturers' value, adj. for exports, imports, and trade margin (10%). Items incl.: cement and concrete machinery, excavating machinery.
Mining, oil, and refining machinery	152	Manufacturers' value, adj. for exports and trade margin (5%). Items incl.: mining, oilwell and oil refinery machinery, mining cars and trucks.
Well drilling and pumping machinery	102	Manufacturers' value, adj. for exports and trade margin (20%). Items incl.: well drilling machinery, pumps and pumping machinery.
Paper and publishing machinery	87	Manufacturers' value, adj. for exports and trade margin (5%). Items incl.: bookbinding, paper mill and pulp mill, photo-engraving, printing and paper box machinery.
Machinery for working clay, glass, stone, wood, rubber, leather	68	Manufacturers' value, adj. for exports and trade margin (20%).
Machine tools, attachments, foundry and welding machinery	376	Manufacturers' value, adj. for exports and trade margin (20%). Items incl.: machine tools, machine tool accessories and small metal working tools, and welding machinery.

Misc. industrial machinery	102	Manufacturers' value, adj. for exports and trade margin (20%). Items incl.: blowers and exhaust fans, gas machines, gas regulators and governors, hydraulic machinery, incandescent lamp machinery, pneumatic machinery, tobacco machinery, pharmaceutical machinery, foundry machinery, electric furnaces and ovens, electric welding apparatus, point making machinery.
Farm machinery and equipment	320	Manufacturers' value for domestic use, adj. for items incl. else where (horse-drawn vehicles, tractors, engines, pumps, water systems, and other small items) and trade margin (20%).
Trade, service, professional equipment, total	600	Manufacturers' value, adj. for exports, sales to consumers (typewriters), and trade margin (35%). Items incl.: adding, calculating, addressing, check-writing, and manufacturing machines, cash registers, and typewriters.
Office machinery	155	Manufacturers' value, adj. for exports and trade margin (35%).
Office furniture	98	Manufacturers' value, adj. for exports and trade margin (35%).
Store and lunchroom furniture and fixtures	147	Manufacturers' value, adj. for exports and trade margin (35%).
Professional, laboratory, and other furniture	29	Manufacturers' value, adj. for exports and trade margin (35%). Items incl.: professional and laboratory furniture, billiard and pool room furniture.
Misc. trade and service equipment	171	Manufacturers' value, adj. for exports and trade margin (25%). Items incl.: electric heating, cooking, beauty shop and barber shop apparatus, packing machines, scales and balances, baling presses, meters, vending machines, motion-picture cameras, lockers, ladders and parts, scaffolding equipment, safes and vaults, electric-therapeutic and medical apparatus.
Machinery and equipment for government use, total	103	Manufacturers' value, adj. for trade margin (10%).
Furniture and fixtures for public buildings	45	Manufacturers' value, adj. for exports and trade margin (5%).
Roadbuilding and dredging machinery	32	Manufacturers' value, adj. for trade margin (20%). Items incl.: street traffic signals and accessories, fire alarm apparatus, street and highway fixtures.
Highway fixtures, traffic signals, fire alarm apparatus	11	Manufacturers' value, adj. for trade margin (20%). Items incl.: government motor vehicles and motorcycles.
Motor vehicles	15	

TABLE 17—Cont.

	METHOD OF ESTIMATE 1
AGGREGATE VALUE (millions of dollars)	
<b>CHANGES IN INVENTORIES, NET TOTAL</b>	
<i>Finished goods, total</i>	145
Trade	—354
Other	—385
	81
<i>Materials and semi-finished goods, total</i>	946
Manufacturing	567
Mining	191
Construction	48
Transportation and public utilities	119
Service and misc.	21
<i>Farm stocks, total</i>	—447
Wheat, corn, oats, barley	—109
Other crops	—218
Animals	—120
<b>CHANGE IN INVESTMENT ABROAD</b>	
	221
<b>DEPRECIATION OF STRUCTURES AND EQUIPMENT, TOTAL</b>	
Residences	8,075
Public and semi-public properties	1,781
	930

Value of corporate inventories, excl. financial corporations, December 31, 1928 and 1929, U. S. Bureau of Internal Revenue, *Statistics of Income*, adj. for estimated percentages of business done by non-corporate enterprises in the major industrial groups, 1928 and 1929. Inventories of enterprises engaged in trade and half of inventories of food manufacturers classified as finished goods; other inventories classified as materials and semi-finished goods.

Estimated from change in stocks and farm prices, B.A.E.  
Estimated at twice the change in stocks of wheat, corn, oats, and barley.  
B.A.E.

A. E. Taylor, *The Balance of International Payments of the United States in 1932*.

Estimated at 15% of residential rental values.  
Estimated at 5% of value of publicly owned property. Value of property owned by states and by cities over 30,000 population from *Financial Statistics of States* and *Financial Statistics of Cities*. Value of property owned by other government bodies assumed to be roughly proportional to 'outlays' as compared with 'outlays' of states and of cities over 30,000 population. Additional small allowance made for semi-public properties.

Corporate property Farms	3,871 912	<i>Statistics of Income, 1929.</i> <i>Income from Farm Production in the United States, B.A.E., re-</i> <i>printed from Crops and Markets, April 1933.</i> Estimated at 15% of amount allowed by corporations, on basis of relative corporate and non-corporate business.
Other non-corporate business enterprises	581	

Trade margins are expressed as percentages of manufacturers' value, or of cost to wholesalers and retailers, respectively, and are derived chiefly from ratios of total expenses to net sales, adjusted for estimated profit margins, reported by the Census of Distribution. Adjustments have also been made for the percentage of each group of products sold by manufacturers to consumers, to retailers, and through wholesale organizations as given in the report by the Bureau of the Census, *Distribution of Sales of Manufacturing Plants*.

For some items, unpublished material made available through the courtesy of government and trade association officials has been used. Some of the figures, including the proportions of transportation outlays assigned to consumers and to business concerns, represent the judgment of the author after consideration of fragmentary data from various sources and consultation with informed persons in government departments or business concerns.

B.A.E.: Bureau of Agricultural Economics.

TABLE 18

RECLASSIFICATION OF WARBURTON'S AND KUZNETS' ESTIMATES  
OF CAPITAL FORMATION, 1929  
(millions of dollars)

	WARBURTON 1	KUZNETS	PAGE REFERENCE 2
<i>Gross Capital Formation</i>	17,808	20,298	
<i>Net Capital Formation</i>	9,733	10,082	
<i>Residential buildings</i>	3,508	3,010	384
<i>Public structures</i>	2,509	2,928	392
<i>Business structures (excl. transportation and public utility), total</i>	2,832	2,552	384
Commercial and industrial buildings	2,104	1,596	
Religious and memorial buildings	115	117	
Miscellaneous, incl. social and recreational buildings	335	361	
Agricultural improvements	278	278	
<i>Transportation and public utility structures, total</i>	2,755	2,030	388
Steam railroads	532	509	
Electric railways	77	90	
Pipelines	475	108	
Air transport	22		
Electric light and power	795	755	
Gas, mfd. and natural	197	232	
Telephone	600	600	
Telegraph	57	48	
Waterworks, private		12	
Adjustment for duplication		—324	
<i>Machinery and equipment, total</i>	5,748	6,487	392
Passenger automobiles for business use	1,079		
Other transportation equipment	1,217	1,087	213
Electric equipment (incl. telephone and telegraph)	623	1,000	"
Industrial machinery and equipment	1,806	2,251	"
Farm machinery and equipment (incl. tractors)	320	698	"
Trade, service, and professional equipment 3	600	1,182	"
Machinery and equipment for government use	103		
Durable containers and misc. durable equipment		387	213

TABLE 18—Cont.

RECLASSIFICATION OF WARBURTON'S AND KUZNETS' ESTIMATES  
OF CAPITAL FORMATION, 1929  
(millions of dollars)

	WARBURTON <sup>1</sup>	KUZNETS	PAGE REFERENCE <sup>2</sup>
Adjustment for change in inventories of wholesalers and retailers		-119	294, 296
<i>Farm livestock, gross increase</i>		442	324
<i>Change in business inventories, net total</i>	+145	+2,414	455
Finished commodities			
Trade	-385	+185	292-97
Other <sup>4</sup>	+31		
Industrial materials and semi-finished commodities			
Manufacturing	+567	+558	441
Mining	+191	+187	"
Construction	+48	+270	"
Transportation and public utilities	+119	+121	"
Trade		+177	441, 292-97
Service and miscellaneous	+21	+6	441
Farm crops and animals			
Wheat, corn, oats, and barley	-109	-109	440
Other crops	-218		
Animals	-120	-73	440
Financial institutions			
Finance corporations		+268	441
Adjustment for price changes during the year <sup>5</sup>		+824	408
<i>Change in stocks of silver and gold</i>		+145	458
<i>Net change in investment abroad</i>	+221	+312	478
<i>Capital Consumption</i>	8,075	10,216	494
<i>Residences, total</i>	1,781	2,480	494
Book values (accounting measures)	1,781	1,838	F-161
Adjustment for price changes		642	F-167, 161
<i>Public properties, total</i>	930	602	494
Book values (accounting measures)	930	524	F-161
Adjustment for price changes		78	F-167, 161
<i>Business properties, total</i>	5,364	7,134	494
Book values (accounting measures)			
Corporate property <sup>6</sup>	3,871	4,430	F-263
Non-corporate, other than farm	581	715	F-263
Farm property, excl. animals	912	948	F-263



TABLE 18—Cont.

RECLASSIFICATION OF WARBURTON'S AND KUZNETS' ESTIMATES  
OF CAPITAL FORMATION, 1929  
(millions of dollars)

	WARBURTON <sup>1</sup>	KUZNETS	PAGE REFERENCE <sup>2</sup>
Farm animals		435	F-116
Adjustment for price changes		+666	F-167,161
Marine and fire losses		223	F-161
Adjustment for depreciation of pas- senger cars <sup>7</sup>		-163	
Other adjustments <sup>8</sup>		+110	

<sup>1</sup> From Table 17.

<sup>2</sup> Kuznets, *Commodity Flow and Capital Formation, Volume One*, except items marked F, which refer to Solomon Fabricant, *Capital Consumption and Adjustment*.

<sup>3</sup> Includes the following items in Kuznets' estimate: office and store equipment, vending machines, signs, soda-water apparatus, theatrical scenery, office and store furniture and fixtures, professional and scientific equipment, carpenters' and mechanics' tools.

<sup>4</sup> Half of change in inventories of food manufacturers.

<sup>5</sup> In Kuznets' estimate, difference between net change in current prices (p. 455) and net change in current valuation (p. 408).

<sup>6</sup> Warburton's estimate includes depreciation; Kuznets' estimate includes depreciation and depletion.

<sup>7</sup> Fabricant's estimates include depreciation on passenger cars used by business enterprises. This depreciation was omitted from Kuznets' estimates because all passenger cars were classified as consumers' commodities.

<sup>8</sup> Differences between Fabricant's revised estimates published in *Capital Consumption and Adjustment* and his earlier estimates available at the time of publication of *Commodity Flow and Capital Formation, Volume One*.

## *Discussion*

I A. G. HART

At several points, the discrepancies between the Warburton and Kuznets estimates of consumption seem to rest on the treatment of goods and services that have been charged to 'business expense' although they are typically bought for consumption. (An important case in point is the allowance for passenger automobiles.) In the debate over these discrepancies, we cannot safely assume that there is an ideal objective measure of consumption that we are trying to approximate. These expenditures constitute a genuine twilight zone between income and business expense. If business expense includes a visit to a night club for a salesman, we must reckon that he has received some income in kind.<sup>1</sup> Or if we rigorously exclude all such items from income, we are under obligation to sift out items paid out of wages and salaries that are really business expense.<sup>2</sup> For many purposes some such sifting might be useful, for instance, expense for heating, an incident of working in the North, might be deducted in comparing income distributions between North and South. But it is well to keep in mind that any line we may choose to draw is arbitrary; it must be justified in the light of the purpose the estimate is to serve.

## II SIMON KUZNETS

Dr. Warburton has succeeded, at the expense of much of his time and probably patience, in rearranging the three estimates of consumers' outlay and national product so as to facilitate intelligent

<sup>1</sup> This assumes that the visit has a positive utility to the salesman; but it may be surmised that natural selection draws people into occupations who like rather than dislike the incidental amusements, travel, etc.

<sup>2</sup> Dr. Shoup gave an admirable list of puzzles along this line in his paper in *Volume One*, pp. 261-9; so I need not labor the point.

comparison. This is a distinct service. But, strangely enough, there appears to be little connection between the substance of his performance, as embodied in the tables, and the general observations he submits at the conclusion of the report. Indeed, a scrutiny of the tables leads one to agree with the fourth observation alone, namely, the desirability of and need for a comprehensive investigation of the value of the nation's output of commodities and services. The other three observations seem to be either contradicted or not supported by the tabular comparisons.

#### I COMPARISON OF NATIONAL INCOME ESTIMATES

Dr. Warburton's estimates of national income were obtained by adding the direct estimates of the value of consumers' outlay and of net capital formation. Those presented by the National Bureau of Economic Research and the Department of Commerce are based on income payments and business savings originated in the various industrial branches. Since the latter two estimates were derived by similar methods, it will be sufficient to compare Dr. Warburton's total with the one with which I am most familiar, that of the National Bureau of Economic Research. Also, since 1929 is the basic year in all estimates compared, and since discrepancies in other years stem largely from the sources that account for the discrepancy in 1929, the analysis of the difference may be confined to that year.

For 1929, Dr. Warburton's estimate of national income is \$95,050 million, whereas the estimate of the National Bureau is \$83,424 million, a substantial difference of \$11.6 billion. But the various sources of this discrepancy are easily identified.

First, there are items included in Dr. Warburton's estimate and excluded from ours: imputed rental value on farm homes, income from rooms in private homes and lodging houses, and the value of alcoholic beverages and narcotics. The former two were excluded because we found it impossible to derive reliable annual estimates: in measuring national income as an annual index of net value product, one is forced to omit minor items for which no reliable continuous measures are feasible. Alcoholic beverages and narcotics were excluded on the general ground that income from illegal activities cannot be treated as productive and hence cannot be included in the national income total.

This point has been discussed elsewhere and need not be dwelt upon here, except to suggest that in order to maintain a consistent position, Dr. Warburton should have included consumers' outlay on the services of the prostitution, gambling, bribery, and similar industries.

The four items listed above are estimated by Dr. Warburton in Table 11 at \$708 million for imputed rent on farm homes, \$746 million for roomers and boarders, \$3,750 million for alcoholic beverages, and \$25 million for non-medicinal narcotics. But of this total of \$5.23 billion, a part represents the production of legitimate commodities and, hence, must have been included in our estimates of national income. This consideration applies to alcoholic beverages and narcotics only, since Dr. Warburton's estimates of the rental items are characterized by him as comprising services alone. It is difficult to estimate the value of the legitimate commodities consumed in 1929 in the production of alcoholic beverages and narcotics, but if we assume it to be 20 per cent of the total value of these items as estimated by Dr. Warburton, a pure guess, we find that under the present head the accountable excess of Dr. Warburton's estimate over ours is \$4.47 billion.

Second, there are three items included in both measures of national income, but for which our estimates are lower: rent paid on non-farm houses, imputed rental on owned non-farm homes, and government services. The difference in the estimates of government services arises from our use of the taxes-paid basis of valuation and Dr. Warburton's use of the cost basis. The discrepancy in the rent items seems to be largely attributable to the fact that while we used the additional evidence made available in the Financial Survey of Urban Housing, Dr. Warburton did not. These data allowed a more detailed approximation of the relation between the value of houses and imputed rent and of the average values in the class intervals of the rent distribution of the Census of Families for 1930.

Dr. Warburton's estimate of rent on non-farm homes is \$4,829 million; ours is \$4,413 million, or \$416 million less. The comparable figures for imputed rental on owned non-farm homes are \$6,338 and \$4,828 million, a difference of \$1,510 million.<sup>1</sup>

<sup>1</sup> Our estimates have recently been revised to take advantage of D. L. Wickens'

These two differences, added to the discrepancy for government services of \$3,056 million (see Table 12, footnote 1) yield a total excess under this head in Dr. Warburton's estimate of \$4.98 billion.

Third, some items in Dr. Warburton's estimate of consumers' outlay on services seem decidedly too high, while at least one is palpably too low. To the former category belong services parts of whose cost is covered by business and other enterprises but which, probably for lack of basis of apportionment, Dr. Warburton includes entirely under outlay by ultimate consumers. Thus the total of health and medical services (\$3,556 million, Table 11) must include a considerable amount paid by business and public agencies, even though the estimate does exclude salary receipts of physicians and dentists. Similarly, the service part of recreation and amusements (\$1,950 million, Table 12) should be partly charged to business and other agencies, rather than fully to ultimate consumers. The same applies to such items as contributions to religious bodies (\$750 million, Table 11), propaganda organizations, and settlement houses (\$200 million, Table 11). The total under this category is about \$6.5 billion. What percentage of this total is paid for directly by agencies other than ultimate consumers is hard to say. But it may be guessed to be not much less than 20 per cent, i.e., \$1.3 billion.<sup>2</sup>

On the other hand, Dr. Warburton's estimate of the outlay for domestic service is palpably too low. His estimate of \$1,024 million (\$161 million for home preparation and \$863 million for domestic service, Table 11) is based upon a consideration of four occupations only and makes no provision for outlay on nurses (not trained), chauffeurs, and waiters and waitresses. A comparable estimate of ours, based upon a consideration of occupations and using average pay derived from questionnaire returns by employment agencies, sets the outlay (exclusive of board and food) about \$580 million higher. Hence, under the present head

work in the field. The changes are, however, relatively minor and affect equally our measure of national income and hence the discrepancy to be accounted for.

<sup>2</sup> The guessing involved here is obvious testimony to the difficulties of the procedure followed by Dr. Warburton. If our interpretation of the character of these particular items is correct, then all we are trying to do is to refine his measures to a point that makes them roughly comparable with the national income totals estimated by industrial origin.

the net accountable excess of Dr. Warburton's estimate over ours is about \$700 million.

Fourth, there is possible duplication between the gross value of rent and several other expenditure items in Dr. Warburton's estimate. Thus, some houses are rented with gas and electricity provided and included in the rent. Also, gross rental may include some of the outlay on paints and varnishes, listed elsewhere by Dr. Warburton under consumers' outlay; as well as part of the item entitled 'maintenance of highways and streets' (so far as the latter is not already covered by the \$3 billion excess in the estimate of the value of government services). These items, part of which may represent duplication with rent are, as listed in Table 11: paints and varnishes (\$237 million); gas (\$546 million); electricity (\$619 million); maintenance of streets and highways (\$456 million); water and garbage removal (\$350 million); and possibly cooking, heating, lighting and refrigerating equipment (\$694 million)—a total of \$2,902 million. Even if only 10 per cent of these items is covered under gross value of the various rent items, the resulting excess is \$290 million.

Adding the discrepancies from the various sources listed above, we find that the accountable excess of Dr. Warburton's estimate of national income over the estimate of the National Bureau of Economic Research totals \$10.4 billion, only a little more than a billion dollars short of the total discrepancy. Of course, the crude character of some of the calculations just made means that the accountable discrepancy may well be a billion dollars larger or smaller than the total of \$10.4 billion arrived at. But the general conclusion of the preceding discussion would stand, regardless of refinements that might be made in it: the discrepancy between Dr. Warburton's estimate of national income and ours is not puzzling. It can easily be explained. It is due partly to the inclusion by Dr. Warburton of some items that we exclude and partly to the larger values for some of the items in Dr. Warburton's estimate, arising either from rough methods, possible duplication, or, in the case of government services, from a different valuation basis.

Since gross national product is closely related to net national product or national income; and since the differences between our estimate of national income and that of the Department of

Commerce are easily accountable for, it follows that the calculations above, suitably modified, will serve to explain both the excess of Dr. Warburton's estimate of gross national product over ours, and the excess of Dr. Warburton's estimate of national income over that of the Department of Commerce.

## 2 COMPARISON OF ESTIMATES OF SERVICES NOT EMBODIED IN NEW COMMODITIES

We may pass now to a comparison of the estimates of services not embodied in new commodities, a component for which the discrepancy between Dr. Warburton's measure and ours is greater than for any other broad component of the national product. For 1929, Dr. Warburton's estimate for this item (\$33.0 billion) exceeds our estimate (\$22.5 billion) by \$10.5 billion (Table 3). This discrepancy is due, in large part, to factors already discussed. The omission from our estimate of imputed rent on farm homes and of income from boarders and lodgers; the larger magnitude assigned by Dr. Warburton to paid and imputed rental on non-farm properties; the excess in his estimate of the value of government services; the possible exaggeration in his estimate of such items as the value of medical, amusement, etc. services, as well as the possible duplication between the gross rental and other items, are all relevant to the present comparison. The only item discussed in the preceding section that does not affect the comparison of estimates of services not embodied in new commodities is the value of alcoholic beverages and narcotics, which contains no direct service element. Thus of the sources that accounted above for a discrepancy of \$10.5 billion, one, which contributed \$3.0 billion, does not bear upon the comparison of estimated outlay for services not embodied in new commodities. But the remaining \$7.5 billion go far toward reducing the discrepancy between Dr. Warburton's and our estimates.

This still leaves an unaccounted excess of \$3.0 billion of Dr. Warburton's estimate of value of services not embodied in new commodities over ours. But a substantial part of this difference may be due to the use of our estimate in the form of a single year value. The basic reason for our employing three-year moving averages rather than single year values was the realization that this particular estimate of services not embodied in new com-

modities, derived by us as a residual, was subject to erratic year-to-year changes. These erratic fluctuations result from differences in the degree of precision with which the subtrahend (consumers' outlay on commodities plus capital formation) and the minuend (national income) reflect annual changes in the true totals.

It is, therefore, interesting to observe that our estimate, by the residual method, of services not embodied in new commodities was higher in both 1928 and 1930 than in 1929: \$23.5 and \$24.4 billion as compared with \$22.5 billion. The three-year moving average centered on 1929 is \$23.5 billion; and it may be said that at least \$1 billion, and perhaps \$1.5 to \$2.0 billion, of the unaccounted excess of Dr. Warburton's estimate over ours is not to be considered significant.

The remaining discrepancy of \$1 to \$2 billion cannot be accounted for. Whether it is due to our underestimate or to Dr. Warburton's overestimate of services not embodied in new commodities, in excess of the allowance suggested in the preceding section, cannot be stated with any degree of assurance. But even were this shortage in our estimate real, an error amounting to between 5 and 10 per cent of the total is hardly an adequate basis for declaring the residual method to be as unreliable as Dr. Warburton asserts.

It is not my intention to claim general virtues and advantages for the residual method. Its weaknesses were stated in the published volumes. But it is pertinent to note that a residual method involving two relatively accurate and comprehensive estimates may be as good as, or better than, a direct estimate based upon inadequate data. A comparison of Dr. Warburton's direct estimate of services not embodied in new commodities with the residual estimate of the same component provides no basis for a judgment that the latter is any less reliable than the former.

If we disregard its erratic year-to-year behavior, the most important disadvantage of the residual method is not the presumptive inaccuracy of the global totals it yields, but the fact that it provides no breakdown among services of various types. Had Dr. Warburton stressed this disadvantage, I should have been the first to concur with him. And it is, of course, this particular consideration that calls for support of Dr. Warburton's fourth



general observation, the recommendation of a detailed study of the nation's output of commodities and services.

### 3 COMPARISON OF OTHER COMPONENTS

The other components in the comparison may be discussed briefly. The measures for the outlay on perishable commodities are approximately the same in both Dr. Warburton's estimate and ours. The excess of the former, appearing in Table 3, is due exclusively to the inclusion of alcoholic beverages and narcotics.

The combined total of semidurable and consumers' durable commodities is larger in our estimate than in Dr. Warburton's by some \$2.3 billion (Table 3). This excess is due largely, but not entirely, to the difference in the estimates for passenger autos, tires and tubes, and auto parts and accessories (Table 5). For passenger cars we make no allowance for business purchases; for the other commodities the percentages allocated by us to ultimate consumers are substantially higher than those allowed in Dr. Warburton's estimate.

The basis of our allocation between business and ultimate use for tires and tubes, and auto parts and accessories is similar to that for other commodities: census data, checked and amplified in the light of review by experts. Hence a question arises only with reference to the failure in our estimate to allow for any business use of passenger autos. Two comments may be made upon this decision. The first is that it was in line with the treatment of many other finished commodities in which there was marked preponderance of either business or ultimate use, and in which no definite basis of allocation was available. In all such cases the commodity was put in the category of preponderant use. And if in the case of passenger autos it resulted in an exaggeration of the outlay by consumers, in the case of certain producers' goods the result was to underestimate outlay by consumers. But it is probable that the net result, as indicated in the published volumes, is to exaggerate somewhat the volume of outlay on consumers' durable goods.<sup>3</sup> The second comment is to the effect that the exaggeration that can be definitely imputed to our estimates of semidurable and consumers' durable goods is relatively minor; and that it results from the same lack of data that explains why

<sup>3</sup> See *Commodity Flow and Capital Formation, Volume One*, p. 467.

two estimators, Dr. Warburton and Mr. Lough, both proceeding along similar lines, produce estimates that are a billion dollars apart.

The difference between Dr. Warburton's and our estimate of net capital formation seems to be due largely to discrepancies in the measure of capital consumption and in the estimates of net changes in inventories. Dr. Warburton discusses the sources of these discrepancies in detail, and there is little need to go over them again here. But it may be noted that his statement of the adjustment for changing inventory valuation (point 7, Sec. II, 4) is confusing. The important point is that no measure of inventory changes as part of capital formation can be derived unless and until inventories are reduced to identical price levels at each of the two year-ends. No direct comparison of inventories as they are given in business accounts is, therefore, feasible in any measure of capital formation that defines the latter as part of the flow of commodities and services.

#### 4 GENERAL OBSERVATIONS

In the light of the discussion above, Dr. Warburton's general observations can be reformulated as follows:

1. In general, for specific commodities few significant differences are observed between the estimates of Dr. Warburton and those of the National Bureau of Economic Research. The larger total of consumers' outlay obtained by Dr. Warburton is due to: (a) inclusion of some items for which no reliable continuous estimates are possible; (b) inclusion of income from some illegal activities; (c) use of cost instead of taxes-paid basis in valuing government services; (d) apparent overvaluation of some direct service items and possible duplication in others. Of these sources, the one under (a) is quantitatively the least important.

2. The estimate of the value of consumers' outlay for services not embodied in new commodities, as the residual between estimates of national income and those of the value of commodities, is not appreciably different from the direct estimate of these services, when differences in the coverage and basis of valuation are taken into account. With the present poor supply of direct data on services not embodied in new commodities, the direct method seems to yield results that seem no more reliable than

those of the residual method, so far as global quantities are concerned. But the residual method suffers from two disadvantages: it is subject to erratic year-to-year changes and it cannot yield a breakdown among various types of services.

3. The total value of consumers' outlay on commodities and services, plus the net value of capital formation, as estimated by Dr. Warburton, is several billion dollars larger than the estimates of national income prepared by the Department of Commerce and the National Bureau of Economic Research. But this discrepancy is easily accounted for by the sources (a) to (d) listed under point (1) above.

4. A new comprehensive investigation of the value of the nation's output of commodities and services is urgently needed, at least for recent years, including 1929. With the present supply of data it cannot be hoped that this investigation will yield results that can serve as a check upon measures of national product derived from income payments and business savings by industrial sources. But such an investigation would provide a useful apportionment of the national product between consumption and capital formation, and reveal various subcomponents of the former.

### III M. A. COPELAND

Dr. Warburton has done a signal service in comparing his estimates of national income and the gross value product of the community, made on the value-of-ultimate-products basis, with Dr. Kuznets' estimates of these series, using the net-value-product formula. Dr. Kuznets notes certain difficulties in localizing, on an industrial basis, the differences between the two sets of estimates. First, he notes that certain industries whose net value product is omitted from his estimates, have a gross value product of \$5.2 billion which is included in Dr. Warburton's figures. He *guesses* that the net value product of these industries would be about \$4.5 billion. Second, he notes that Dr. Warburton includes the entire gross value product of certain service industries, although a part of their product should have been treated not as an ultimate product but as an intermediate service consumed by

other enterprises. Dr. Kuznets *guesses* that the amount of the gross value product in such service industries, which is improperly counted as a part of the ultimate value product, is about \$1.3 billion.

On several previous occasions, I have urged the desirability of having, for one or more selected years, a complete detailed check of the two methods of estimating national income and gross value product against each other, or what comes to the same thing, the desirability of having an estimate by both the debit net value product method and the credit net value product method for every industry. Such a check would provide comparable estimates of both gross value product and net value product for each industry group and also a breakdown of the gross value product of each industry group into value of ultimate and of intermediate products. When such a check is open to us, we ought not to resort to *guessing*.

#### IV CLARK WARBURTON

Dr. Kuznets states that three of the four general observations at the close of my paper seem to be either contradicted or not supported by the tabular comparisons presented in the paper. The validity of one of the three observations—namely, that a careful analysis is needed of the difference between my estimate of the national income and those prepared by the Department of Commerce and the National Bureau of Economic Research—is evident from the space devoted by Dr. Kuznets himself to that very analysis.

Dr. Kuznets rightly points out that the difference between his estimate of national income and mine is due to two types of factors: (a) omission from his estimates of items I have included; (b) differences in the estimates of the value of the various commodities and services. However, his comparison of the two estimates is inadequate, for he has only partly explored the reasons for the \$11.6 billion, or 14 per cent, excess of my estimate of national income in 1929 over his own. Dr. Kuznets' list of items included in my estimates but not in his seems incomplete. I have been unable to find in *Commodity Flow and Capital Formation*,

*Volume One* any allowance for cut flowers and plants, or for the cost of meals sold by restaurants in excess of the retail value of the food consumed. My estimates of consumers' outlay upon items omitted by Dr. Kuznets are given below. In this connection I have ignored Dr. Kuznets' comment that part of the value of alcoholic beverages is included in his estimate, for the reason that his estimates for other commodities must be too high by a compensating amount. Figures are in billions of dollars.

ITEMS INCLUDED IN WARBURTON'S ESTIMATES BUT NOT IN KUZNETS'

<i>Commodities, total</i>	
Alcoholic beverages and narcotics	4.9
Cut flowers and plants	3.8
Cost of meals in restaurants in excess of retail value of food consumed	0.2
	0.9
<i>Services, total</i>	
Imputed rental value of farm homes	1.5
Imputed net rental value of rooms in private homes and lodging houses	0.7
	0.8

My comparison in Table 6 regarding the evaluation of services for which Dr. Kuznets does not give specific estimates needs revision in the light of the figures given in his comments. The revised figures, in billions of dollars, are given below.

	KUZNETS	WARBURTON
<i>Total value of services not embodied in commodities</i>	22.5	33.0
<b>Deduct</b>		
Services incl. by Warburton but not by Kuznets (imputed rental value of farm homes and of rooms in private homes and lodging houses)		1.5
Items incl. in both estimates for which Kuznets gives specific estimates (rent of nonfarm homes, imputed rental value of owner-occupied nonfarm homes, and domestic service)	10.8	12.2
Government services to individuals	1.8	4.9
Balance, value of services incl. in both estimates but not separately evaluated by Kuznets	9.9	14.4

Dr. Kuznets has mentioned certain service items for which my estimates are substantially higher or lower than his. He has failed, however, to give sufficient attention to commodity items for which his estimates are substantially higher or lower, mostly higher, than mine. These must obviously be taken into consideration not only because they are important items of difference

between the two estimates but also because failure to take them into account minimizes the difference that must be accounted for elsewhere.

The list below covers the differences between Dr. Kuznets' estimates and mine of the value of those commodities and services for which we have both prepared specific estimates. I have attempted to enumerate each item showing a difference amounting to more than a quarter of a billion dollars. The figures for services are based on those given by Dr. Kuznets in his comments on my paper.

ITEMS FOR WHICH KUZNETS' ESTIMATES ARE HIGHER THAN WARBURTON'S  
DIFFERENCE

	BILLIONS OF DOLLARS	PER CENT
<i>Consumers' commodities, total</i>	4.3	
Food and non-alcoholic beverages	0.4	2
Coal	0.4	52
Soaps, cosmetics, etc.	0.3	51
Passenger automobiles	1.2	57
Automobile tires, tubes, parts, and accessories	0.8	142
Other commodities, net excess	1.1	6
<i>Consumers' services, total</i>	0.6	
Domestic service	0.6	57
<i>Capital formation, total</i>	4.6	
Public structures	0.3	13
Machinery and equipment (excl. passenger automobiles for business use)	1.8	39
Net change in inventories (incl. farm animals and stocks of silver and gold)	2.4	1670
Net change in investment abroad	0.1	41

ITEMS FOR WHICH WARBURTON'S ESTIMATES ARE HIGHER THAN KUZNETS'  
DIFFERENCE

	BILLIONS OF DOLLARS	PER CENT
<i>Consumers' commodities, total</i>	0.9	
Clothing materials	0.6	39
Tobacco	0.3	16
<i>Consumers' services, total</i>	1.9	
Rent of nonfarm homes	0.4	9
Imputed rental value of owner-occupied nonfarm homes	1.5	31
<i>Capital formation, total</i>	4.3	
Residential buildings	0.5	17
Business structures (excl. transportation and public utility)	0.3	11
Transportation and public utility structures	0.7	36
Passenger automobiles for business use	1.1	
Capital consumption (excl. farm animals), excess of Kuznets' estimate over Warburton's	1.7	17

With the foregoing data we are in a position to summarize the elements making up the \$11.6 billion difference between Dr.

Kuznets' and my estimates of the national income in 1929. The items for which my estimates exceed his are marked plus, and those for which his estimates exceed mine, minus. The figures are in billions of dollars.

<i>Net excess of Warburton's estimate of national income in 1929 over Kuznets'</i>	
Items not covered by Kuznets	+11.6
Difference in method of treating government services	+6.4
Services not embodied in commodities for which Kuznets does not give separate estimates (i.e., covered only by the residual between his estimates of national income and of consumers' outlays and capital formation)	+3.1
Net difference resulting from differences in evaluating specific items, accounted for as follows:	+4.5
	-2.4
<i>Items evaluated higher by Warburton than by Kuznets, total</i>	
Consumers' commodities	+7.1
Consumers' services	+0.9
Capital formation	+1.9
	+4.3
<i>Items evaluated higher by Kuznets than by Warburton, total</i>	
Consumers' commodities	-9.5
Consumers' services	-4.3
Capital formation	-0.6
	-4.6

These figures support the observations at the close of my paper to which Dr. Kuznets objects. In the first of those general observations, I stated that my evaluations of the cost of specific commodities to ultimate consumers were more conservative than Dr. Kuznets'. As indicated above, my estimate of consumers' outlay for commodities for which Dr. Kuznets also estimates such outlay is \$3.4 billion, or 7 per cent, smaller than his estimate. My larger figure for total consumers' outlay, I stated, was due to more inclusive coverage, direct estimation rather than use of a residual process for evaluating consumers' services, and use of the cost rather than the tax basis of evaluating government services. These three differences, as indicated above, amount, respectively, to \$6.4, \$4.5, and \$3.1 billion. Even though these estimates were to be reduced by about \$2 billion in accordance with Dr. Kuznets' suggestion that he may have attributed a part of the value of the omitted items to other commodity items and that I may have included some duplication in the service items, these

three factors would still be responsible for my larger estimate of total consumers' outlay.

My second general observation to which Dr. Kuznets objects—namely, that the evaluation of consumers' outlay for services as the residual between estimates of the national income and those of outlay for consumers' commodities and capital formation is unreliable—is also reinforced by the more detailed analysis presented here. After eliminating the items—rental values and domestic service—which are not included in Dr. Kuznets' estimates or for which he has given specific estimates in his comments, his method gives a value of \$9.9 billion for items I have evaluated at \$14.4 billion and Mr. Lough at \$16.5 billion. My estimate for these items is 45 per cent, and Mr. Lough's, 67 per cent, larger than Dr. Kuznets'. Only three items estimated directly by both Dr. Kuznets and myself, excluding items for which our allocations to consumer and business use differ substantially, show as great a difference, and these three (soaps, cosmetics, etc.; domestic service; and change in inventories) are items for which the direct estimates have a low degree of reliability.

Dr. Kuznets further suggests that to maintain a consistent position I should have included consumers' outlay on the services of prostitution, gambling, bribery, and similar industries. With this I agree, and since Dr. Kuznets thinks I have indulged in guesses of doubtful reliability with respect to the value of alcoholic beverages and other items, and he himself does some 'guessing' in his comments on my paper, I shall venture a guess that these and other omitted items are of the order of magnitude, in 1929, of from \$3 to \$5 billion.

One other comment of Dr. Kuznets requires mention here. He thinks that some of my estimates, particularly those relating to medical service, are too high because the items are in part paid for by business enterprises rather than by individuals. This contention is of dubious validity, since such payments by business enterprises may be looked upon as compensation to employees, in addition to money wages or salaries, or in the case of contributions to community chests and philanthropic institutions, as a part of the value of the product of business concerns which is distributed to beneficiaries of the contributions rather than to



stockholders or employees. As Dr. Hart points out, many such expenditures constitute a genuine twilight zone between income and business expense, but in my estimates I have deliberately included in income a somewhat larger proportion of this twilight zone than has Dr. Kuznets.

These considerations lead directly to a question I did not specifically ask in my paper, but to which my paper was in part directed. How large a proportion of national income, defined as the aggregate value of all commodities produced and all direct services rendered during the year minus that part of the nation's stock of goods which was expended in producing this total, is covered by the estimates of the National Bureau of Economic Research and the Department of Commerce? Though the National Bureau and the Department of Commerce, in their publications on national income, have pointed out that their coverage is not complete, those estimates have been assumed to be more reliable, as estimates of the amount of the national income, than they actually are.

To indicate the extent to which the national income estimates of the National Bureau and the Department of Commerce may be too small, let us combine Dr. Kuznets' estimates of the value of the commodity and service items for which he has prepared specific estimates with my estimates and guesses for the items omitted or not specifically evaluated by Kuznets. The result, in billions of dollars, for 1929 is given herewith. These figures may be compared with Dr. Kuznets' estimate of \$83.4 billion for

*Kuznets' estimates of the constituent items of national income he specifically evaluates*

Consumers' outlay for commodities	50.8
Consumers' outlay for services (from his comments on my paper)	10.8
Capital formation	10.1

*Warburton's estimates of constituent items of national income not specifically evaluated by Kuznets*

Government services to individuals	4.9
Other consumers' services evaluated by Kuznets only as a residual	14.4
Consumers' commodities and services incl. in Warburton's estimates but not in Kuznets'	6.4
Consumers' commodities and services omitted from both estimates	3.0 to 5.0

*Total value of commodities produced and personal services rendered during 1929*

100.4 to 102.4

national income in 1929 and the Department of Commerce estimate (latest revision, *Survey of Current Business*, June 1939) of \$82.3 billion. They suggest that those estimates may understate the net value of all commodities produced and personal services rendered during the year by as much as 15 or 20 per cent. Perhaps, as Dr. Kuznets insists, the figures of the National Bureau and of the Department of Commerce include nearly all the items for which the preparation of annual estimates is feasible. However, the wide margin between those estimates and the one just presented provides added emphasis to Dr. Copeland's comment about the desirability of having for one or more selected years a complete detailed check of the estimates of national income derived by summing on the one hand, the amounts of income drawn by individuals from each industry, and on the other hand, the value of the various commodities and services produced.

