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PART II

Decade Estimates, 1869-1939

Since, for lack of data, annual estimates could nòt be made, the estimates of national product and its major categories by type of use, 1869-1938, are averages calculated for decades overlapping at five-year intervals. For the full span covered, each series comprises therefore thirteen decade averages.

In general, the series are derived by combining annual estimates, 1919-38, with Shaw's data on the flow of finished commodities and construction materials, at producers' prices, back to 1879 and extrapolated to 1869. The annual estimates for recent years are given in Part I; and the important steps in their derivation are set forth in detail in *Commodity Flow and Capital Formation,* Volume One. Shaw's series on the flow of commodities at producers' prices are summarized in *Occasional Paper 3* (National Bureau of Economic Research, Aug. 1941) and will be set forth in detail in his *Value of Commodity Output since 1869.* The various devices used to combine the two bodies of data to get the decade estimates of national product and its components are described in the tables in this Part and their notes. The purpose of the brief discussion here is merely to indicate the basic steps and attempt to appraise some assumptions that had to be made in calculating the decade estimates.

1 *Commodity Flow*

a COVERAGE OF BASIC SERIES

Before we consider how Shaw's series, derived mainly from successive Censuses of Manufactures, were treated to arrive at the flow of finished commodities to consumers and the value of new construction, the coverage and comparability of the Shaw series proper must be noted. These are in turn determined largely by the adequacy of the underlying data in the *Census of Manufactures.*[1]

In Shaw's estimates no adjustments were made for (a) exclusion from Census data of establishments with an annual value of product of less than $500; (b) exclusion from Census data of government manufacturing establishments; (c) possible understatement in the 1869 Census. In addition, (d) products of hand trades and custom establishments were excluded by applying to

[1] For a more detailed discussion of the latter see W. H. Shaw, *Value of Commodity Output since 1869* (in press), particularly Part II, Sec. A.

the Census years before 1899 the ratio estimated for 1899 (somewhat less than 3 percent).

The shortages in coverage represented by the omissions under (a) and (b) are definitely negligible. For 1899 the value product of establishments below the reporting minimum was less than 0.5 percent of the total covered; and it is doubtful that the omission was as much as 1 percent even in the earlier years. Manufacturing plants owned and operated by the government are of slight importance in peacetime; and their output could have been large only in 1918, although even then most war production was flowing through privately owned or operated enterprises. The effect on the decade averages, could it have been measured, would have been negligible, even for 1909-18 and 1914-23.

Concerning the 1869 Census there seems to be unanimity on the fact of understatement, but considerable difficulty in measuring it. The official estimate of understatement in the *Census of Population* is 1.5 million (most of it in the South), or 5 percent of the reported total; others place it at 0.9 million, or less than 3 percent of the reported total.[2] In his book Shaw states that the possible undercoverage in the *Census of Manufactures* is perhaps "as much as 5 percent"; and in a recent discussion "between 5 and 10 percent". Such undercoverage would presumably be due to incomplete coverage of several smaller industries and failure to use special schedules and employ 'expert special agents' (as was done in the later censuses).

If we accept the upper figure, 10 percent, which seems high in comparison even with the upper limit of the adjustment of the population census, two factors materially reduce the effect on our decade averages. First, since this particular understatement applies to the census data for 1869 alone, the averaging involved in deriving the estimate for the 1869-78 decade means cutting the relative understatement in the *decade average* in half; in the decade average for 1874-83 to one-quarter. The adjustment called for would then be to raise the averages for the two decades by at most 5 and 2.5 percent respectively. Second, manufactured products are not the only items entering the flow of consumers' commodities and of capital formation. In the former, nonmanu-

[2] See reference to F. A. Walker's estimate in W. F. Willcox, *International Migrations* (National Bureau of Economic Research, 1931) II, 98.

factured foods (i.e., foods sold to ultimate consumers without any fabrication, or retained by farmers for their own consumption) are important; in the latter, nonmanufactured construction materials, changes in inventories and in net claims against foreign countries affect the total, and of these inventory change alone is partly affected by the estimates of manufactured output. Consequently, the maximum upward adjustment in either the flow of goods to consumers or national product would have to be cut further to some 4 percent for 1869-78 and to 2 percent for 1874-83.

The omission of hand trades and custom establishments may be compensated by the inclusion of part of their value product under services not embodied in new commodities, or under value added to construction materials in estimating new construction. So far as the activities of these trades and establishments are not so covered, their omission from the Shaw series restricts unwarrantedly coverage for the present purposes. Fortunately, their exclusion is admittedly incomplete for the earlier Census dates. By the same token, any upward adjustment on this account would be quite small. The somewhat less than 3 percent allowance Shaw used to exclude this item for years before 1899, must, if used as an upward adjustment, be reduced by (a) possible coverage under services and construction; (b) absence of distributive margins on the products in question, which renders their weight in the flow of finished goods, at cost to ultimate users, less than their weight in the flow at manufacturers' values. All told, an allowance of 1 percent, in terms of the larger aggregates of flow of commodities to consumers and national product, seems ample, even for the earliest decade in the series.

The foregoing discussion suggests that the *maximum* upward adjustment called for by undercoverage of the basic series would, for national product and its major components, be about 5 percent for 1869-78; 4 percent for the subsequent decades through 1889-98; and gradually dwindle to insignificant levels by 1919-28. For some of the smaller components the adjustment might be somewhat larger, but in none apparently much more than 5 percent even in the earliest decades. Were there adequate evidence upon which to estimate these adjustments carefully, and especially to set them separately for each component of the flow of

goods to consumers and of capital formation, it might have been advisable to introduce them into the detailed series in the basic tables, and eventually into the over-all totals. But because of lack of such evidence, and in view of the slightness of the adjustment even when assigned maximum values, it did not seem worth while to introduce the correction. The approximation to it given above may be used, in full cognizance that it is the maximum adjustment on account of the undercoverage discussed and is, in the nature of the case, exceedingly crude.

b   PASSING FROM OUTPUT AT MANUFACTURERS' PRICES TO
    FLOW AT FINAL COST
Shaw's series are for the value of commodities destined for domestic consumption, i.e., output adjusted for exports and imports, at producers' current and 1913 prices. To link this series with the more recent estimates, 1929 rather than 1913 was used as the constant price base. More important were the steps taken to pass from the flow to domestic consumption at producers' prices to the flow to ultimate consumers at cost to them.

Shaw's series on output destined for domestic consumption of finished commodities are grouped into four major categories: perishables, semidurables, consumer durables, and producer durables. Output of construction materials, adjusted for imports and exports, was also estimated by Shaw. To estimate the flow of finished commodities to consumers, at cost to them, the totals of output destined for domestic consumption had to be raised to include transportation and distribution costs, and adjusted for changes in finished inventories. To estimate the final value of new construction, i.e., to pass from the value of raw materials consumed to the full value of new construction, additional steps were taken. All the steps just indicated were applied to the series on output destined for domestic consumption, in both current and 1929 prices after the latter had been calculated from Shaw's series, using his minor rather than major commodity groups, and thus allowing for differences in minor group weights between the 1913 and 1929 bases.[3]

[3] This refinement in shifting the price adjustment base from 1913 to 1929 was found indispensable when the results of a shift, using major commodity groups alone, were compared with the price series beginning with 1919 in the detailed analysis in

In general the allowance for transportation and distribution costs and the adjustment for inventory changes were calculated by assuming that their proportional weights—for each major commodity group valued at *constant* prices—during the earlier decades were the same as those during 1919-33 or 1919-28. For transportation and distribution costs the relative share for 1919-33 was used,[4] because it is the longest period for which we have both detailed data and analysis of these two constituents of commodity costs to ultimate consumers and because it includes enough years of both cyclical expansion and contraction to yield levels from which long term, secular levels could be extrapolated. To estimate changes in finished inventories we used the ratio of additions to inventories to additions to flow for 1919-28, thereby omitting the severe cyclical contraction that followed 1928. Since the estimates to which the adjustments were to be applied showed a continuous secular increase in the real volume of goods, any ratios that were to be applied to them to get a rough estimate of inventory changes had to be based upon a period of marked increase in real volume. Finally, in estimating total new construction from the output of construction materials, the basic ratios were for periods similar to those used for finished commodities: 1919-28 for changes in inventories, and 1919-33 for the proportional weight of other items. The procedure called for approximating not only distribution and transportation charges and changes in inventories but also the proportional weight of costs other than that of raw materials and the relative importance of repairs.

How large were the adjustments entailed by these crude assumptions? Table II a shows the allowance for transportation and distribution charges, as well as the adjustment for changes in finished inventories, expressed in percentages of the final value

Commodity Flow and Capital Formation. The differences between the price indexes obtained by shifting Shaw's base from 1913 to 1929 by *major* commodity groups and those based on the detailed work for recent years were clearly due to the fact that the former set of price indexes retained within each major group the 1913 weights of the minor groups. When the shift in bases was made by the minor groups, the indexes obtained from Shaw's data and those in *Commodity Flow and Capital Formation* were closely similar for the years compared.

[4] Except for the semidurable commodity group and for construction materials, where the ratio was for 1929 alone.

TABLE II a

Steps in Estimating Gross Commodity Flow and Construction
Average Value per Year, 1869-1918

	PERISH-ABLE (1)	SEMI-DURABLE (2)	CON-SUMER DURABLE (3)	PRO-DUCER DURABLE (4)	CONSTRUCTION MATERIALS & CONSTRUCTION (5)
	MILLIONS OF DOLLARS				
1 Output destined for domestic consumption, current prices	4,380	1,607	785	937	1,214
2 Output destined for domestic consumption, 1929 prices	6,958	2,662	1,394	1,577	2,173
3 Retail value of (2), 1929 prices	10,438	4,223	2,268	1,826	3,168
4 Net change in finished inventories, 1929 prices	+54	+64	+32	+6	+18
5 Flow to industrial consumers, 1929 prices					3,150
6 Net change in inventories of industrial consumers, 1929 prices					+14
7 Flow into consumption, 1929 prices					3,136
8 Final value, 1929 prices	10,383	4,159	2,236	1,820	4,402
9 Final value, current prices	6,538	2,513	1,260	1,076	2,123
	PERCENTAGE DISTRIBUTION				
10 Output destined for domestic consumption, 1929 prices	67.0	64.0	62.3	86.6	49.4
11 Retail value of (2), 1929 prices	100.5	101.5	101.4	100.3	72.0
12 Net change in finished inventories, 1929 prices	0.5	1.5	1.4	0.3	0.4
13 Flow to industrial consumers, 1929 prices					71.6
14 Net change in inventories of industrial consumers, 1929 prices					0.3
15 Flow into consumption, 1929 prices					71.2
16 Final value, 1929 prices	100.0	100.0	100.0	100.0	100.0

Averages of estimates for successive decades in Tables II 1, II 2, II 3, II 4, and II 5, lines 1, 3, 5, 7, and 9.

LINE
1 Col. 1 of the respective tables.
2 Col. 2 of the respective tables.
3 Col. 3 of the respective tables.
4 Col. 4 of the respective tables except for col. 5 which is based on data underlying col. 4 of Table II 5.

LINE
5 Line 3 minus line 4.
6 Based on data underlying col. 4 of Table II 5.
7 Line 5 minus line 6.
8 Col. 5 of the respective tables.
9 Col. 7 of the respective tables.
10-16 Percentage distribution of line 8.

of each of the four major finished commodity groups, and also the proportional weight of various additions to the value of construction materials (destined for domestic consumption) made in obtaining the final cost of new construction. The percentage share of the added cost items ranges from 13 for producer durables to 38 for consumer durables; while the largest addition, about one-half of the final total, is made to the value of construction materials flowing into domestic consumption.

Even sizable errors in estimating the transportation and distributive margins would be much smaller when measured as percentages of the final totals, i.e., in terms of costs to ultimate consumers or recipients of the commodities. For example, a 20 percent error in the combined allowance for transportation and distribution charges would mean an error of less than 7 percent in the final estimate of the flow of perishable commodities; of about 7 percent, for semidurable commodities; of 7-8 percent, for consumer durables; and of less than 3 percent for producer durables. In construction alone would the reduction in the error in the various adjustments be smaller; although even here a 20 percent error in the combined adjustment would mean an error of only 10 percent in the final estimate of the value of new construction.

The validity of one set of assumptions can be checked, roughly, by estimates of the distribution of national income by industrial origin. Of the charges by railroads and other transportation agencies for carrying freight, the preponderant proportion must be accounted for by payments to labor and on invested capital. Of retailers' and wholesalers' margins, an overwhelming proportion must be accounted for by the compensation of employees in wholesale and retail establishments, the net income of entrepreneurs, and the property income payments on invested capital. The share of national income originating in transportation and trade, compared with that originating in all commodity producing industries combined (agriculture, mining, manufacturing, and construction), if studied for a long period, can at least suggest whether there have been noteworthy secular shifts in the proportional weight of transportation and distribution margins in the value of commodities, at producers' prices, and, by implication, in the final value of finished commodities (Table II b).

TABLE II b

Ratios of Income Originating in Transportation and Trade to
National Income and to Income Originating in Commodity Production
1869-1928
(dollar figures in millions, current prices)

AVERAGES PER YEAR	NATIONAL INCOME (1)	INCOME ORIGINATING IN		%(3) IS OF (1) (4)	%(3) IS OF (2) (5)
		Commodity Production (2)	Transportation & Trade (3)		
NATIONAL INDUSTRIAL CONFERENCE BOARD ESTIMATES					
1 1869 & 1879	7,027	2,925	1,910	27.2	65.3
2 1879 & 1889	8,964	3,623	2,510	28.0	69.3
3 1889 & 1899	13,032	5,560	3,532	27.1	63.5
4 1899 & 1909	20,910	9,432	5,532	26.5	58.7
5 1899-1908	19,928	8,863	5,413	27.2	61.1
6 1904-13	25,614	11,656	6,862	26.8	58.9
7 1909-18	34,942	16,367	8,990	25.7	54.9
NATIONAL BUREAU OF ECONOMIC RESEARCH ESTIMATES					
8 1909-18	39,815	16,779	7,652	19.2	45.6
9 1914-23	55,602	23,147	11,252	20.2	48.6
10 1919-28	70,541	27,859	14,165	20.1	50.8

COLUMN 1

LINE

1-7 Robert F. Martin, *National Income in the United States, 1799-1938* (National Industrial Conference Board, 1939), pp. 6-7.

8 & 9 Data comparable with *National Product in Wartime,* App. Table III 9, plus imputed rent.

10 Estimated by multiplying the 1919-28 data in *National Income and Its Composition,* I, 310, Table 44 (excl. government savings), by the ratio of the 1919-23 data in line 9 to the 1919-23 data in *ibid.*

COLUMN 2

1-7 Martin, *op. cit.,* pp. 58-9. Includes agriculture, mining, manufacturing, and construction.

8 & 9 See note to col. 1, lines 8 and 9. Includes agriculture, mining, manufacturing, and construction.

10 Extrapolated by the procedure used for col. 1, line 10, with estimates in *National Income and Its Composition,* I, 310, Table 44, as index.

COLUMN 3

1-7 Martin, *op. cit.,* pp. 58-9. Includes transportation and communication and trade.

8 & 9 See note to col. 1, lines 8 and 9. Includes steam railroads, Pullman, and express; water transportation; and trade.

10 Extrapolated by the procedure used for col. 1, line 10, with estimates in *National Income and Its Composition,* I, 310, Table 44, for trade; II, 660, Table P 2, for steam railroads; and II, 661, Table P 3, for water transportation, as index.

Unfortunately, net income originating in the transportation and distribution activities that concern finished commodities alone cannot be segregated. Furthermore, the estimates in Table II b are in current prices, whereas our assumption that the relative weight of transportation and distribution charges is constant is for values in constant prices. Nevertheless, the comparison is of some interest. It shows (col. 5) that the ratio of the net income originating in transportation and trade to that originating in the commodity producing industries declines, from a percentage ratio of about 65 during the first three decades to about 55 in 1909-18.

These figures suggest that instead of assuming a constant proportional weight of transportation and distribution charges we should have allowed for a mild down trend, thereby raising slightly the allowance in the early decades of the long period covered by our estimates. But for several reasons it did not seem advisable to apply the trend suggested by Table II b. The main reason was doubt concerning the extent to which the numerator and denominator used in deriving the ratio in column 5 truly described transportation and distribution costs, and the value of commodities destined for domestic consumption, with which we are concerned. The producers' value already includes some transportation and distribution charges, as well as contributions of other industries (service, government) not included under *net* income originating in the commodity producing industries. In this sense the denominator (col. 2) is incomplete. On the other hand, the numerator (col. 3) is too large in that it includes charges for services on unfinished commodities or to individuals. It is perhaps significant that while column 5 shows a distinct down trend, column 4, in which the numerator remains the same but the denominator is extended to cover the full product of the economy, shows a secular decline so small as to be negligible.

Also, the estimates in Table II b are in current prices; and differences among secular movements in compensation of resources in production and in trade may be important. Of the total gainfully occupied, the percentage attached to manufacturing and hand trades grew from 16.7 in 1870 to an average of 24.1 in 1920 and 1930; that attached to trade from 6.3 to 11.2 (recent

revisions by Daniel Carson of his estimates in *Labor Supply and Employment, Preliminary Statement of Estimates Prepared and Methods Used,* WPA, mimeo., Nov. 1939). The ratio of gainfully occupied attached to trade to those attached to manufacturing rose, therefore, from 0.38 to 0.46. This suggests a rise in the ratio of distribution margins to the value of manufactured products at producers' prices, rather than the decline indicated in Table II b. But the trend may well be more than offset by a greater increase in productivity per worker in manufacturing industries than in trade.

The considerations adduced made it inadvisable to use the evidence in column 5 of Table II b to alter our basic assumption. But even were we to accept the evidence in Table II b at full face value, the modification in our final estimates would be minor. A drop in column 5 from 65 percent in 1869-79 to 55 percent in 1909-18 and a subsequent rise to roughly 60 percent in 1919-28 [5] would mean both raising the adjustments for the early decades and lowering the adjustment for the 1909-18 decade less than one-tenth. This, in terms of final values, would imply changes of 1.5 to 3 percent in the four major categories of finished commodities and in construction (for the latter taking account only of transportation and distribution costs). Therefore, the assumption of the long term stability of relative transportation and distribution costs probably does not make for a large error.

The construction estimates are based on assumptions, in addition to those relating to distribution and transportation margins, concerning the ratio of the total value of construction, including repairs and maintenance, to the cost of construction materials consumed; and the ratio of total construction to new, i.e., excluding current repairs and maintenance (see Table II 5). The validity of assuming that these two ratios remained constant (for values in 1929 prices) during the decades preceding 1919 can be checked but crudely, but crude checks are better than none.

Of the total difference between the value of construction and the cost of construction materials consumed, a substantial proportion is constituted by net income originating in the industry,

[5] Allowing for the disparity in levels between the two series in col. 5, as indicated by the two entries for 1909-18.

TABLE II c

Comparison of Allowance for Construction Costs other than Materials
with Income Originating in Contract Construction, 1869-1928
(dollar figures in millions, current prices)

	AVERAGES PER YEAR (1)	INCOME ORIGINATING IN CONTRACT CONSTRUCTION (2)	AVERAGES PER YEAR (3)	DIFFERENCE BETWEEN TOTAL CONSTRUCTION & FLOW OF CONSTR. MATERIALS (4)	RATIO OF (4) TO (2) (5)
1	1869 & 1879	373.5	1869-78	263.5	0.71
2	1879 & 1889	495.5	1879-88	460.1	0.93
3	1889 & 1899	643.0	1889-98	831.9	1.29
4	1899 & 1909	904.0	1899-1908	1,215.4	1.34
5	1899-1908	886.9	1899-1908	1,215.4	1.37
6	1904-13	1,107.1	1904-13	1,612.1	1.46
7	1909-18	1,115.7	1909-18	1,902.3	1.71
8	1914-23	1,571.7	1914-23	2,495.2	1.59
9	1919-28	2,588.7	1919-28	4,096.1	1.58
	PERCENTAGE CHANGE				
10	1869-89 to 1889-1908	+76.1		+182.9	
11	1889-1908 to 1909-28	+142.1		+193.0	

COLUMN

2 R. F. Martin, *National Income in the United States, 1799-1938,* pp. 58-9. The
average, 1919-28, for income originating in construction, as estimated in *National
Income and Its Composition,* I, 310-1, Table 44, is $3,223 million.

4 Difference between col. 5 and 6 of Table II 5, multiplied by the index of wages
in construction (see notes to Table IV 4, line 1).

i.e., payments to employees, net income of entrepreneurs, and
payments on the invested capital. We may, therefore, compare
the level and particularly the movement of the spread between
the cost of materials and the final value of construction implicit
in our estimates with independent estimates of net income origi-
nating in the construction industry (Table II c).

The comparison is subject to three qualifications. First, income
originating is merely part of the spread between the cost of
materials and the final value of construction, the other part being
payments to other industries (fees to various professional groups,
rent, payments for equipment, taxes, etc.). Second, the estimates
in column 2 are for income originating in contract construction
alone, i.e., exclude all construction on force account; our estimates
of the spread, and indeed of all aspects of construction, include
force account work. Third, Martin's estimates of net income
originating in construction are some 20 percent lower than those

in *National Income and Its Composition*, chiefly because all un-
distributed savings and construction work in connection with oil
wells (drilling, etc.) are excluded.

The third qualification may not have any definite bearing upon
the comparison of *trends* in Table II c. But the effect of the first
two can be surmised. The portion of the total difference between
the value of construction and the cost of materials not repre-
sented by net income originating could be expected to constitute
a growing proportion of the spread because of an increasing use
of services of other industries and a growing burden of taxes.
Likewise, at least during part of the period, the increasing im-
portance of construction by public utilities, by government, and
by large enterprises in other industrial areas may have raised the
proportion of force account work. On both scores, we would
expect the trend in the spread between the value of construction
and the cost of materials consumed to be algebraically greater
than the trend in net income originating in the construction in-
dustry.

And it is. In current prices net income originating, as measured
by Martin's series, rises from about $435 million in the first two
decades to $2,589 million in 1919-28, or fivefold (col. 2). The
spread increases from $360 million to $4,096, or over tenfold
(col. 4). We do not know whether this difference is too great to
be accounted for by the considerations adduced; but in view of
the crudity of the comparison, one is inclined to accept the indi-
cated trend in the difference between the two series without
assigning too much significance to its magnitude.

A more perplexing circumstance is that, for the first two
decades, the spread is smaller than net income originating. Per-
haps our assumptions tend to underestimate the spread; or,
what is more probable, our index of construction wages, used to
convert the spread from 1929 prices into current, indicates a
lower wage level relative to that in recent years than is implied
in the Martin estimates. It is not clear that the fault lies with our
estimates. Martin's estimates are perforce based upon scanty evi-
dence for this early period and are for single years rather than
decade averages—an important factor in estimating a process so
subject to well defined and long cycles as construction. At any

rate, the evidence did not seem sufficient to warrant revising our estimates for the earlier decades.[6]

Even were the revision to be made, the effect on the final estimates of new construction would be small. If the ratio of the entries in columns 4 and 2 (lines 1 and 2) should be 1.1 rather than 0.7 and 0.9 respectively, the final estimates of construction in current prices (Table II 5) would be raised, for 1869-78, from $702 to $884 million; and for 1879-88 from $1,162 to $1,262 million—26 and 9 percent, respectively. But to repeat, the evidence for such revision is inconclusive.

TABLE II d

Ratio of Allowance for Repairs and Maintenance Construction to Total Value of Real Estate Improvements, 1880-1922
(dollar figures in millions, 1929 prices)

YEAR (1)	VALUE OF REAL ESTATE IMPROVEMENTS 1ST VARIANT (2)	AVERAGES PER YEAR (3)	ALLOWANCE FOR REPAIRS & MAINTENANCE (4)	% (4) IS OF (2) (5)
1880	27,480	1874-83	642	2.3
1890	48,462	1884-93	1,312	2.7
1900	68,510	1894-1903	1,671	2.4
1912	116,329	1909-18	2,441	2.1
1922	117,405	1919-28	2,670	2.3

COLUMN
2 Table IV 5, line 19.

4 Difference between col. 6 and 7 of Table II 5.

Is it valid to allow for repairs and maintenance as a constant percentage of total construction, with the percentage at the level of the 1920's? Perhaps the most revealing check feasible is to compare the resulting estimate of repairs and maintenance, in 1929 prices, with the value of all existing construction in 1929 prices (Table II d). If the level looks reasonable, and there is no puzzling trend that runs counter to a reasonable expectation that the ratio of repairs and maintenance to existing structures should remain fairly constant, our assumption can be said to be confirmed.

The ratio in Table II d may at first seem too large, since ordi-

[6] The possible undercoverage of the *1869 Census of Manufactures* is relevant here (see discussion in Sec. 1a above). Even a generous allowance for such understatement would account for only a small part of the discrepancy in line 1 and for none of that in line 2.

narily annual expenses on repairs and maintenance do not run so high—more than 2 percent of the value of a real estate unit. But the ratio customarily used is to the value of a unit, including land; and the latter is important, even if we exclude agriculture and mining. Omitting the latter and using current values as reported, improvements proper constitute roughly 60 percent of the total value including land (see Tables IV 1 and IV 2). The application of this percentage would reduce the entries in Table II d, column 5, to 1-1.5 percent; and to less, if agriculture and mining are included. So stated, the ratios do not seem unduly high.

Nor do they show any significant long term movement. Perhaps the crudities of the estimates, especially of the denominator, conceal some trends due to the shifting composition of total improvements, of which repairs and maintenance are a part. But if so, the trends are too weak to emerge. And apparently Table II d suggests no basis upon which to disqualify the assumption used in passing from total to new construction in Table II 5.

A final check upon our estimates of new construction lies in comparing, for the four overlapping decades 1914-38, the independent estimates of new construction with those calculated from the flow of construction materials (Table II e, lines 5a-c). The check is of limited significance because the estimates of the value of new construction derived from the flow of construction materials use ratios for distribution and transportation margins, spreads, etc. that are based upon data for new construction in *part* of the period under comparison. Yet the distribution and transportation margins are based upon data for one year alone, 1929; and those for the spread between the value of total construction and the cost of materials, and for the proportion of repairs and maintenance, upon 1919-33, i.e., fifteen of the twenty-five years compared. There are thus elements of independence between the two series.

The average values (means of the four overlapping decades) differ little: in current and in 1929 prices they run about 3 percent higher in the crude estimates derived from the flow of construction materials than in those derived from independent data on new construction. Of more interest is the greater prominence of the long cycle in the latter. In 1929 prices the latter rise almost 40 percent from 1914-23 to 1924-33, and decline more than 30

percent from 1924-33 to 1929-38; the former rise almost 20 per-
cent and decline about 20 percent. We can therefore assume that
the proportion of distribution and transportation charges, or of
the spread between the cost of materials and the value of total
construction, increases during the rising phase of the long cycle
and declines during the declining phase; and that perhaps the pro-
portion of repairs and maintenance to total construction declines
during the rising phase and increases during the declining phase.
Whether all or only some of these movements occur, one may
surmise that for the past decades also our crude estimates under-
state the amplitude of the long cycle in construction more than
could be attributed to the use of decade averages rather than of
data for single years or months.

The crude tests discussed above are far from conclusive, and
indeed cannot help being: in all except one the estimates against
which our approximations were checked have perhaps even a
wider margin of error and a less secure foundation in statistical
detail. But they indicate no substantial ground for inferring that
the assumptions made in our estimates of the flow of finished
commodities and of total new construction lead to appreciable
errors, a conclusion that is of particular relevance not to the
single decade totals but to such grouping of them as is involved
in attempts to establish the broader trends for the long period
covered.

c   ADJUSTMENT FOR BUSINESS USE OF PASSENGER CARS AND
    RELATED PRODUCTS

We finally compare the estimates of the flow of finished com-
modities based upon the assumptions indicated above with those
based upon the more detailed analysis for recent years (Table
II e). The comparison does not fully test the reliability of the
estimates for past years, because it can be made for only three
overlapping decades—1919-28, 1924-33, and 1929-38; and the
basic ratios upon which the cruder estimates are grounded are
taken from the more detailed information for 1919-28 or 1919-33.
Consequently, the two sets of estimates overlap sufficiently to
make the comparison spurious for most commodity categories, at
least for one of the three decades, viz., 1919-28. The comparison
in Table II e (lines 1-4) is intended, therefore, not to test the

TABLE II e

Gross Commodity Flow and Construction
Decade Estimates and Averages of Annual Estimates, 1919-1938
(dollar figures in millions)

	CURRENT PRICES				1929 PRICES			
	1919-28 (1)	1924-33 (2)	1929-38 (3)	Av. of 1919-28 & 1929-38 (4)	1919-28 (5)	1924-33 (6)	1929-38 (7)	Av. of 1919-28 & 1929-38 (8)
1 Perishable Commodities								
a Av. of annual estimates	24,505	23,893	23,243	23,874	23,895	26,456	29,391	26,643
b Decade estimates	24,679	23,293	21,994	23,336	23,549	25,824	27,254	25,402
c Diff. as % of (a)	+0.7	-2.5	-5.4	-2.3	-1.4	-2.4	-7.3	-4.7
2 Semidurable Commodities								
a Av. of annual estimates	10,889	10,080	8,495	9,692	9,190	10,252	9,940	9,565
b Decade estimates	10,806	9,766	8,094	9,450	9,058	9,915	9,261	9,160
c Diff. as % of (a)	-0.8	-3.1	-4.7	-2.5	-1.4	-3.3	-6.8	-4.2
3 Consumer Durable Commodities								
a Av. of annual estimates	6,860	6,705	5,475	6,168	6,554	6,982	6,080	6,317
b Decade estimates	7,991	7,633	6,628	7,310	7,596	7,869	7,212	7,404
c Diff. as % of (a)	+16.5	+13.8	+21.1	+18.5	+15.9	+12.7	+18.6	+17.2
d Decade estimates, adj.	6,928	6,705	5,475	6,202	6,585	6,982	6,080	6,332
4 Producer Durable Commodities								
a Av. of annual estimates	5,650	5,129	4,356	5,003	5,479	5,335	4,774	5,126
b Decade estimates	4,965	4,329	3,903	4,434	4,738	4,486	4,202	4,470
c Diff. as % of (a)	-12.1	-15.6	-10.4	-11.4	-13.5	-15.9	-12.0	-12.8
d Decade estimates, adj.	5,735	5,129	4,356	5,046	5,472	5,335	4,774	5,123
5 Construction								
a Av. of annual estimates	8,528	8,303	5,274	6,901	8,310	8,504	5,797	7,054
b Decade estimates	8,188	8,038	6,008	7,098	7,981	8,235	6,602	7,292
c Diff. as % of (a)	-4.0	-3.2	+13.9	+2.9	-4.0	-3.2	+13.9	+3.4

Notes to Table II e:

LINE 1 a

COLUMN	COLUMN
1-3 Table II 1, col. 7, lines 15-17.	5-7 *Ibid.*, col. 5, lines 15-17.

LINE 1 b

1-3 *Ibid.*, col. 7, lines 11-13.	5-7 *Ibid.*, col. 5, lines 11-13.

LINE 2 a

1-3 Table II 2, col. 7, lines 15-17.	5-7 *Ibid.*, col. 5, lines 15-17.

LINE 2 b

1-3 *Ibid.*, col. 7, lines 11-13.	5-7 *Ibid.*, col. 5, lines 11-13.

LINE 3 a

1-3 Table II 3, col. 7, lines 14-16.	5-7 *Ibid.*, col. 5, lines 14-16.

LINE 3 b

1-3 Table II 3, col. 7, lines 11-13.	5-7 *Ibid.*, col. 5, lines 11-13.

LINE 3 d

1 & 5 Table II 6, lines 5 and 7.	2, 3,
	6, 7 Identical with line 3 a.

LINE 4 a

1-3 Table II 4, col. 7, lines 14-16.	5-7 *Ibid.*, col. 5, lines 14-16.

LINE 4 b

1-3 *Ibid.*, col. 7, lines 11-13.	5-7 *Ibid.*, col. 5, lines 11-13.

LINE 4 d

1 & 5 Table II 6, lines 9-11.	2, 3,
	6, 7 Identical with line 4 a.

LINE 5 a

1-3 Table II 5, col. 9, lines 16-18.	5-7 *Ibid.*, col. 7, lines 16-18.

LINE 5 b

1-3 *Ibid.*, col. 9, lines 11-13.	5-7 *Ibid.*, col. 7, lines 11-13.

validity of the assumptions, already discussed in connection with Tables II a and II b, but rather to bring out an additional adjustment—the allowance for the business use of passenger cars and related products (gasoline and oil in the perishable group; tires, etc. in the semidurable).

The estimates of the final flow of finished commodities in Tables II a and II 1-II 4, are based upon extrapolation of the totals for recent years and Shaw's data, which do not allow for the business use of passenger cars and related products. Such an allowance has recently been made for the annual estimates beginning in 1919 (see Part I). Should a similar adjustment be made for the decade estimates for the years before 1919?

The difference between the unadjusted (lines b) and the adjusted totals (lines a) for the perishable and semidurable commodity groups is minor. Indeed, the unadjusted totals based upon

the cruder assumptions are somewhat smaller rather than larger than the totals from which automobile products used by business units have been deducted. But the differences are so minor that we can treat as fairly comparable the cruder estimates for the period before 1919 and the more detailed estimates for the years since 1919, the latter adjusted for the business use of products related to passenger cars; and construct a continuous series of decade estimates without additional adjustments for the decades preceding 1919-28.

It is for the consumer durable and producer durable commodity groups that the allowance for the business use of passenger cars is relatively large. The reduction in the total for consumer durables and the increase in that for producer durables are too great to warrant considering the decade estimates for years before 1919 and those after 1919 comparable without further adjustment of the former. For this reason we introduce (in Table II 6) into the cruder decade estimates this further adjustment for the business use of passenger cars back to 1899-1908 (by which decade the correction is negligible). This adjustment makes the cruder decade estimates for consumer and producer durable commodity groups closely comparable with decade averages of the more detailed annual estimates for the years beginning with 1919.

2 *Flow of Goods to Consumers*

The data and procedures discussed so far yield estimates for three groups of finished commodities—perishable, semidurable, and consumer durable—which constitute major components of the total flow of goods to consumers, at cost to them. But these three series are for commodities alone, and to complete the measurement of the total flow of goods to consumers we have to estimate also services not embodied in new commodities. The latter group is large, including services of various descriptions flowing to ultimate consumers: those yielded by commodities (e.g., residential housing); those provided by individuals and applied to commodities already in the possession of ultimate consumers (e.g., passenger car repair); those rendered by individuals or enterprises directly to ultimate consumers (e.g., professional services of physicians or services of governments to individuals).

In Part I we gave our reasons for estimating such services flow-

ing to ultimate consumers in recent years as a residual, that is, by subtracting from national product independently estimated final product categories except services (i.e., commodity flow to ultimate consumers and capital formation).

The results of the residual procedure are also used here—in deriving decade estimates for the years before 1919. Data needed for extrapolation back to the earlier decades are samples on the composition of budgets, primarily of low income urban consumers, in combination with the only detailed study of such budgets available for all consumers in this country for a recent period, 1935/36. Though it suffers from many gaps and deficiencies, this is the sole body of data with which a reasonably acceptable approximation can be constructed. From it we estimate the long term movement in the proportion of services to the total flow of goods to consumers back to 1869. The data and the procedures used in deriving the secular movement of this basic proportion are discussed in detail in Part III, which indeed, is in the nature of a long note to Table II 7.

As the sample data are for the composition of consumers' budgets in current prices, they provide a basis for estimating the value of services in current prices. An index of the changes in the ratio of services to the total flow of goods to consumers, in current prices, is constructed; it is then used to extrapolate back the proportions established for recent years and presented in detail in Part I. The remaining task, to adjust the value of services in current prices to 1929 prices, offers particular difficulties. For the years before 1919 no price data for services are available, with the single though important exception of rents. And comparison for recent years of the movement of the prices of finished commodities with that of the prices of services other than rent does not yield a relation that can be applied, for the decades before 1919, to the commodity price indexes to give an acceptable picture of the long term movements in the prices of services.

The qualitative changes in services during the long period give rise to greater difficulties in estimating price movements properly than would seem to be the case for commodity prices. For many commodities a fair degree of standardization had been attained early in the period under study; e.g., a loaf of bread or a suit of clothes or a bed in the 1870's and in the 1920's were similar

enough for their prices to be compared. Only in some of the newer consumer durable goods was quality improvement so great as to render price comparisons over a long period subject to an exceedingly wide margin of error (ordinarily in the direction of underestimating the decline). In most services the quality change seems to have been much greater: certainly the improvement in the quality of at least professional services, and those rendered either by or in connection with durable commodities, was enormous. Even if the customary price indexes were available for the long period, the legitimacy of their use without substantial adjustments, the basis for which would have been exceedingly difficult to establish, would be subject to serious doubt.

The procedure finally adopted to adjust the value of services, *other than rent,*[7] for price changes was, for reasons just indicated, merely a crude expedient. We used the index of prices of all finished consumer commodities (perishable, semidurable, and durable), holding that the broad secular sweeps in such finished commodity prices could not but affect the prices of services; that any practicable index of the prices of services must be subject to the same biases as these commodity price indexes because of failure to take account of improvement in quality; and that while the magnitude of the long term movements in the prices of services, if not their direction, may have been different from those in commodity prices, we had no evidence upon which to estimate such possible differences.

The relative importance of the category under discussion is revealed in Table II f, which shows both the large share services constitute of the total flow of goods to consumers—from over one-quarter to over one-third—and the secular rise in that share revealed by the sample data underlying the estimate. This secular rise is the result of the shift in consumers' expenditures, and indeed in the final product structure of national income, to a larger proportion for services as per capita levels of product and of consumption rise.[8]

[7] For rent, an important subcomponent of the service category, the price adjustment was made by a specific index of rents.

[8] The service share as estimated here includes implicitly direct taxes paid by individuals as a measure of government services to individuals. In including this item (and imputed rent) the flow of goods to consumers differs from 'consumers' outlay' as estimated by the Department of Commerce for recent years.

TABLE II f

Share of Services in the Flow of Goods to Consumers, 1869-1938

		$ MILLION, AVERAGES PER YEAR		% OF FLOW OF GOODS TO CONSUMERS	
		Commodities	Services	Total	Commodities	Services
		(1)	(2)	(3)	(4)	(5)
		CURRENT PRICES				
1	1869-1888	5,237	1,932	7,169	73.1	26.9
2	1889-1908	9,484	4,152	13,636	69.6	30.4
3	1909-1928	32,042	16,006	48,048	66.7	33.3
4	1919-1938	39,733	22,433	62,166	63.9	36.1
		1929 PRICES				
5	1869-1888	8,356	3,302	11,658	71.7	28.3
6	1889-1908	18,556	7,701	26,257	70.7	29.3
7	1909-1928	34,644	18,356	53,000	65.4	34.6
8	1919-1938	42,524	23,992	66,516	63.9	36.1

COLUMN 1

LINE
1-4 Table II 8, col. 1-3.

LINE
5-8 *Ibid.*, col. 6-8.

COLUMN 2

1-4 *Ibid.*, col. 4.

5-8 *Ibid.*, col. 9.

Since the total flow of goods to consumers accounts, in turn, for a large proportion of net national product, ranging above 80 percent during the period under study, the value of services flowing to ultimate consumers also accounts for a sizable share of total product—from one-fifth to over one-quarter.

3 *Capital Formation*

The data and procedures used to derive commodity flow, discussed in Section 1, yield estimates of two major components of gross capital formation: gross flow of producer durable commodities and gross value of new construction. For the former, the crude decade estimates for the years before 1919, after adjustment for the business use of passenger cars, can be combined with the decade averages of annual estimates for years beginning with 1919 to form a continuous series, 1869-1938; and for the latter, the crude pre-1914 decade estimates can be combined, without adjustment, with decade averages of annual estimates for years beginning with 1914.

To compute both gross and net capital formation, two other groups of estimates are needed. (a) To pass from gross to net

capital formation, the current consumption of construction and
of producer durable equipment has to be estimated. (b) To form
totals of capital formation we must add to the value of construc-
tion and the flow of producer durable commodities net changes
in inventories and in claims against foreign countries.

a) Annual estimates of current consumption, for construction
and producer durable equipment combined, are available begin-
ning with 1919 (see Table I 16 and the discussion in Part I);
and are calculated, with various adjustments and extensions,
largely from accounts of business enterprises. To divide these
totals between construction and producer durables, and to extend
them back through the decades preceding 1919, we used one and
the same device: consumption was calculated on the basis of a
constant life period for each of the two major categories and
apportioned on a straight line principle. For producer durable
equipment the life period assumed was 13 years, equivalent to
an annual depreciation rate of almost 8 percent; for construc-
tion it was fifty years (six decades, with the terminal decades at
half weight), equivalent to an annual depreciation rate of 2
percent. These periods were selected on the basis of information
in *Capital Consumption and Adjustment,* pp. 176-83, for recent
years.

By assuming these periods and adopting the principle of ap-
portioning consumption over life, we could, with the help of
annual data on the current flow of producer durable equipment
and decade data on the value of new construction, calculate con-
sumption for all the decades up to 1919; and use the extensions
beyond 1919 to apportion the already calculated consumption
total (in Part I) between that of construction and of producer
durables.

Table II g shows the large proportion that current consump-
tion of construction and producer durable equipment constitutes
of the gross value of production during any substantial period.
For the more durable construction, the proportion ranges from
one- to two-thirds; for producer durable equipment, from one-
half to eight-tenths. Notable also is the upward trend in the pro-
portion of consumption to gross value.

It would be idle to speculate whether the basic assumption of

TABLE II g

Consumption of Construction and of Producer Durable Commodities
Compared with Gross Flow, 1869-1938
(dollar figures in millions, averages per year)

| | | CURRENT PRICES | | | 1929 PRICES | | |
		Gross Flow (1)	Con- sumption (2)	% (2) is of (1) (3)	Gross Flow (4)	Con- sumption (5)	% (5) is of (4) (6)
				CONSTRUCTION			
1	1869-1888	932	387	41.5	2,087	864	41.4
2	1889-1908	2,285	846	37.0	5,269	1,940	36.8
3	1909-1928	6,156	3,482	56.6	7,459	4,154	55.7
4	1919-1938	6,901	4,809	69.7	7,053	5,046	71.5
				PRODUCER DURABLE			
5	1869-1888	456	258	56.6	753	426	56.6
6	1889-1908	951	606	63.7	2,001	1,285	64.2
7	1909-1928	4,208	2,927	69.6	4,680	3,201	68.4
8	1919-1938	5,003	4,049	80.9	5,126	4,175	81.4
			CONSTRUCTION AND PRODUCER DURABLE				
9	1869-1888	1,388	645	46.5	2,840	1,290	45.4
10	1889-1908	3,236	1,452	44.9	7,270	3,225	44.4
11	1909-1928	10,364	6,409	61.8	12,139	7,355	60.6
12	1919-1938	11,904	8,858	74.4	12,179	9,221	75.7

COLUMN 1

LINE

1-4 Derived from Table II 5, col. 9, lines 1, 3, 5, 7, 14, 16, 18.

5-8 Derived from Table II 4, col. 7, lines 1, 3, 5, 14, and 16, and Table II 6, line 9.

9-12 Sum of lines 1 and 5, 2 and 6, 3 and 7, 4 and 8, respectively.

COLUMN 2

1-4 From data underlying Table II 14, col. 6, lines 1, 3, 5, 7, 9, 11, 13.

5-8 From data underlying Table II 14, col. 3, lines 1, 3, 5, 7, 9, 11, 13.

9-12 Sum of lines 1 and 5, 2 and 6, 3 and 7, 4 and 8, respectively.

COLUMN 4

1-4 From Table II 5, col. 7, lines 1, 3, 5, 7, 14, 16, 18.

5-8 From Table II 4, col. 5, lines 1, 3, 5, 14, and 16, and Table II 6, line 11.

9-12 Sum of lines 1 and 5, 2 and 6, 3 and 7, 4 and 8, respectively.

COLUMN 5

1-4 From Table II 14, col. 4, lines 1, 3, 5, 7, 9, 11, 13.

5-8 From ibid., col. 1, lines 1, 3, 5, 7, 9, 11, 13.

9-12 Sum of lines 1 and 5, 2 and 6, 3 and 7, 4 and 8, respectively.

the procedure, a constant life period for construction and equip-
ment, is historically valid. Perhaps we should assume a shorter
life for these capital goods in the early years of the period than
in the later because of the greater rapidity of technological im-
provement and hence of obsolescence; or, a shorter life in recent
decades than in the earlier because of greater competitive pres-
sures and of the attraction the depreciation charge as a deduc-
tion in calculating corporate income taxes had for business
enterprises. Suffice it to say that there is no evidence at hand to
invalidate an assumption of constant life; and that whatever
rough checks on the application of these assumptions can be made
do not reveal bias. In Part IV the cumulated additions of net
values of construction and producer durable equipment are com-
pared with the net changes in corresponding categories of re-
producible wealth, the latter adjusted to a constant valuation
base. Because the underlying data are crude, this comparison can-
not be a definitive check on our estimates of the consumption
of construction and durable equipment; but it does not indicate
that this particular step in our procedure should be revised.

b) Net changes in *all* inventories, for decades preceding 1919,
were estimated by a procedure somewhat analogous to that used
in estimating changes in inventories of finished commodities and
construction materials (Sec. 1). From data for 1919-28, a ratio
of inventories (end and beginning of period) to an index of the
volume of activity is established; the index is extrapolated to
earlier decades for as many sectors of activity as are covered
by available data; the ratio is applied to compute terminal in-
ventories; and the net change in inventories is calculated. Then
the sum of these inventory changes in the several sectors of
activity, supplemented in some sectors by estimates based upon
inventory holdings, is raised to a more comprehensive coverage
by the ratio, calculated for 1919-28, of the 'separately estimated
sectors' to the total comprised in the more detailed annual esti-
mates for years beginning with 1919.

The chief difference between this procedure and that used in
estimating changes in finished inventories in Section 1 lies in the
use of a ratio of terminal inventories to the average level of
activity (measured in index form) instead of a ratio of the addi-

tions to inventories to the additions to the flow. Absence of data on the flow of *all* commodities, for both recent and earlier years, necessitated this approach. So far as it neglects the possible downward trend in the ratio of inventories to total activity, it may underestimate additions to inventories in the early decades. However, the bias cannot be appreciable; certainly not in its effect on the estimates of national product or even on gross or net capital formation.

Net changes in claims against foreign countries rest upon the flow of goods and services into and out of the country. The longest series, constituting the backbone of the estimates, is for the balance of merchandise exports and imports. It is either combined with other items in the international balance of payments or raised to complete coverage on the basis of crude ratios. The whole calculation is an adaptation of the work for years before 1919 by Messrs. Bullock, Williams, and Tucker.

The proportion of either of these two categories of capital formation, or even of the two combined, in gross capital formation, is fairly small (Table II h). Net changes in inventories range from about one-quarter to less than one-tenth of gross capital formation; net changes in claims against foreign countries from −8 to +8 percent. In net capital formation the categories loom larger, but do not exceed a third. A notable trend is the rise of the net claims against foreign countries from a consistently negative share in the 19th century to a sizable positive share in the 20th—reflecting the transition of this country from an international debtor to an international creditor status.

Since these two categories constitute only moderate shares of capital formation, they are quite small when measured as shares of national product, gross or net. Gross capital formation ranges consistently below one-quarter of gross national product; and net capital formation consistently below one-fifth of net national product. Consequently, neither net changes in inventories nor net changes in claims against foreign countries, nor their combined total, when expressed as decade averages, can run much above 5 percent of national product. The items, being small and based on scanty data, are subject to wide relative error, and should not be used as independent measures of change in inventories or in the net balance of foreign claims. But

TABLE II h
Net Changes in Inventories and in Claims Against Foreign Countries
Compared with Total Capital Formation, 1869-1938
(dollar figures in millions, averages per year)

		CURRENT PRICES			1929 PRICES		
			PERCENTAGE OF			PERCENTAGE OF	
			Gross	Net		Gross	Net
		DOLLAR	Capital	Capital	DOLLAR	Capital	Capital
		TOTAL	Formation	Formation	TOTAL	Formation	Formation
		(1)	(2)	(3)	(4)	(5)	(6)
		NET CHANGES IN INVENTORIES					
1	1869-1888	383	22.6	36.6	503	15.5	25.8
2	1889-1908	315	8.9	15.2	494	6.4	11.0
3	1909-1928	1,272	10.1	20.5	1,057	7.5	15.5
4	1919-1938	920	6.9	20.2	566	4.3	14.0
		NET CHANGES IN CLAIMS AGAINST FOREIGN COUNTRIES					
5	1869-1888	−80	−4.7	−7.6	−104	−3.2	−5.3
6	1889-1908	−30	−8.5	−1.4	−48	−0.6	−1.1
7	1909-1928	976	7.7	15.7	962	6.8	14.1
8	1919-1938	585	4.4	12.9	506	3.8	12.6
		NET CHANGES IN INVENTORIES AND IN CLAIMS AGAINST FOREIGN COUNTRIES					
9	1869-1888	303	17.9	29.0	399	12.3	20.5
10	1889-1908	285	8.1	13.8	446	5.8	9.9
11	1909-1928	2,248	17.8	36.2	2,019	14.3	29.7
12	1919-1938	1,505	11.2	33.1	1,072	8.1	26.6

COLUMN 1

LINE
1-4 Derived from Table II 13, col. 3, lines 1, 3, 5, 7, 9, 11, 13.

5-8 Derived from *ibid.*, col. 4, lines 1, 3, 5, 7, 9, 11, 13.

9-12 Sum of lines 1 and 5, 2 and 6, 3 and 7, 4 and 8, respectively.

COLUMN 2
Based on col. 1 and gross capital formation derived from Table II 13, col. 5, lines 1, 3, 5, 7, 9, 11, 13.

COLUMN 3
Based on col. 1 and net capital formation derived from Table II 15, col. 5, lines 1, 3, 5, 7, 9, 11, 13.

COLUMN 4
1-4 Derived from Table II 13, col. 8, lines 1, 3, 5, 7, 9, 11, 13.

5-8 Derived from *ibid.*, col. 9, lines 1, 3, 5, 7, 9, 11, 13.

9-12 Sum of lines 1 and 5, 2 and 6, 3 and 7, 4 and 8, respectively.

COLUMN 5
Based on col. 4 and gross capital formation derived from Table II 13, col. 10, lines 1, 3, 5, 7, 9, 11, 13.

COLUMN 6
Based on col. 4 and net capital formation derived from Table II 15, col. 10, lines 1, 3, 5, 7, 9, 11, 13.

an error in the estimates of these categories cannot affect the
estimates of national product or capital formation greatly.

4 *National Product*

Capital formation is a component of national product, peacetime
concept, as defined in *National Product in Wartime* and as
measured in Part I. Including all construction, public and private,
war and nonwar, it is assumed to include the full flow of pro-
ducer durable equipment and net changes in all inventories.
Statistical difficulties preclude estimating changes in govern-
ment-held inventories and may result in incomplete coverage of
the output of munitions. But except for a few years (such as
1917 and 1918) the omissions are negligible; and even those for
the World War I years are not likely to form large proportions
of the *decade* averages. The present series can thus be taken as
tolerable approximations to the capital formation component of
national product, peacetime concept.

With decade estimates covering both the flow of goods to con-
sumers and capital formation, we can obtain by simple addition
estimates of total national product, gross and net. Since only the
peacetime concept is used in this Part and is relevant to longer
term studies, it is not designated as such in the text and tables that
follow.

What is the margin of error in the decade estimates of national
product and its major components? In the nature of the case,
any appraisal must be tentative; but one may be helpful to pos-
sible users of the series as an opinion of their reliability based
upon familiarity with the underlying data and the procedures.

For the comprehensive totals of national product and their
major components, such as flow of goods to consumers, gross
value of producer durables, gross construction, the maximum
error in the estimates for the decades before 1919 can be said
to be 15 percent; for the later three decades, less than 10 percent.
The maximum errors may be somewhat larger for the various
categories of the flow of goods to consumers; and, on a per-
centage basis, much larger for the net totals—net producer dur-
ables, net construction, changes in inventories, changes in claims
against foreign countries, particularly the last two.

Owing to possible shortages in the underlying data or errors

inherent in some of the assumptions, the comprehensive totals for the 1869-78 decade may be understated by as much as 10 percent; for the 1874-83 decade by as much as 5 percent; for the subsequent decades through 1899-1908 by as much as 2 to 3 percent. As suggested, particularly by the discussion in Section 1, these percentages for the earliest two decades in the series are a maximum rather than a medium allowance.

Naturally, the possible errors would be lessened by combining the single decades. In any study of secular trends, a combination of the series into periods covering two or more decades would yield results subject to much narrower margins of maximum error than those just suggested.

These judgments, and they cannot be more, can be strengthened, but not confirmed, by two comparisons. The first is of the present series for net national product or national income with Martin's recent estimates of national income, covering a comparable period and based throughout upon the flow of income payments approach (Table II i).

Certain differences in concept must be noted. The Martin series does not include undistributed net profits of enterprises

TABLE II i

Net National Product Derived from Commodity Flow Data Compared with Martin's Estimates of Realized National Income, 1869-1938

(dollar figures in millions, averages per year, current prices)

		PRESENT ESTIMATES (1)	MARTIN'S ESTIMATES (2)	DIFFERENCE AS % OF (1) (3)
1	1869-78	6,489	7,027	+8.3
2	1879-88	9,941	8,964	−9.8
3	1889-98	11,671	13,032	+11.7
4	1899-1908	19,740	19,928	+1.0
5	1904-13	26,273	25,614	−2.5
6	1909-18	36,341	34,942	−3.8
7	1914-23	55,324	51,672	−6.6
8	1919-28	72,160	67,135	−7.0
9	1924-33	70,139	66,397	−5.3
10	1929-38	61,274	60,829	−0.7
	PERCENTAGE CHANGE			
11	1869-98 to 1889-1918	+141.1	+134.0	
12	1889-1918 to 1909-38	+150.6	+139.9	

COLUMN

1 Table II 16, col. 5.

2 R. F. Martin, *National Income in the United States, 1799-1938* (National Industrial Conference Board, 1939), p. 6, Table 1.

and makes no allowance for net savings of governments. The inclusion of these items for recent years in the present series explains the shortage of the Martin estimates. But it is to be doubted that in the earlier decades the excluded items constitute as much as 5 percent of the total; and their relative importance must diminish as we go back in time.

The present series is too complex to be described simply as being based upon commodity flow. For years beginning with 1919, the controlling totals, though allocated by final product categories with the help of additional data on commodity flow, are, as indicated in Part I, based upon the flow of income payments. For the years before 1919, the decade estimates are based largely upon commodity flow data, supplemented by a study of samples relating to services; and these decade estimates are combined with the decade averages of annual estimates for recent years either without adjustment or adjusted only for the business use of passenger cars. But, at least for one important category, viz., services not embodied in new commodities, the cruder pre-1919 decade estimates are spliced to the more detailed estimates for subsequent years by extrapolating the ratios based for recent years on income payments. To that extent, the entire series for national product back to 1869 is an extension of the annual series that begins in 1919, i.e., of the series controlled by the flow of income payments approach.

The present series may, therefore, be described as an extension into the past, primarily on the basis of commodity flow data, of recent estimates derived by the flow of income payments approach; and the Martin series, as an extension, primarily on the basis of flow of income payments data, of recent estimates. So far as these different bases of extension mean that the two series are independent, they are a check on each other.

The greatest difference between them is for the 1889-98 decade, about 15 percent, if we take into account the narrower scope of the Martin estimates. The smallest is for the decades 1904-13 and 1909-18. Nor are the differences distributed in such a fashion as to suggest that the longer trends indicated by the two series would diverge widely (see lines 11 and 12).

Another interesting comparison is of percentage changes from decade to decade in the present estimates of gross national

TABLE II j

Rates of Growth, Successive Overlapping Decades
Gross National Product in 1929 Prices and
Two Indexes of 'Total' Production, 1869-1928

| | | % INCREASE SHOWN BY | | |
		Gross National Product 1929 Prices (1)	Day-Persons Index (2)	Warren-Pearson Index (3)
1	1869-78 to 1874-83	43.6	30.6	32.8
2	1874-83 to 1879-88	31.1	27.5	28.6
3	1879-88 to 1884-93	18.9	21.1	21.4
4	1884-93 to 1889-98	15.6	18.0	20.2
5	1889-98 to 1894-1903	23.1	20.1	24.3
6	1894-1903 to 1899-1908	25.1	23.2	26.6
7	1899-1908 to 1904-13	21.0	17.8	19.8
8	1904-13 to 1909-18	13.4	17.1	15.3
9	1909-18 to 1914-23	14.2	12.9	7.5
10	1914-23 to 1919-28	20.5	13.0	10.8

COLUMN

1 Based on Table II 16, col. 9.

2 W. M. Persons, *Forecasting Business Cycles* (Wiley & Sons, 1931), p. 170. The index was converted to arithmetic means per decade, and their percentage increases calculated.

3 G. F. Warren and F. A. Pearson, *Physical Volume of Production in the United States* (Cornell Agricultural Experiment Station Memoir 144, Nov. 1932), Table 1, pp. 5-7. The variable weight index, weighted by value plus value of manufacture, was used.

product, in 1929 prices, with those in the most comprehensive indexes of the physical volume of production now available (Table II j). Since these indexes do not cover total national output, the point of the comparison is not in the levels of the rates of increase, or even in the degree of their retardation, but primarily in the fluctuations in the three measures.

The fluctuations in the rate of increase of gross national product, as estimated here, are similar to those in the production indexes based upon a quite different set of data. The peaks appear in all three columns in lines 1, 6, and 10; the troughs in lines 4 and 8 or 9. The only difference in timing is the occurrence of the trough in column 1 in line 8; in columns 2 and 3 a quinquennium later (line 9). But there is a marked difference in amplitude: the fluctuations in the rate of increase in gross national product, as estimated here, are much more pronounced than in either the Day-Persons or the Warren-Pearson index—possibly a reflection of the greater sensitivity of our estimates and of the more com-

prehensive inclusion of activities in which long trend cycles are especially prominent (notably construction).

In the light of the discussion in Section 1a of the possible bias resulting from the inadequacy of the 1869 Census, the comparison of lines 1 and 2 with the other lines of Table II j is specially instructive. The high rate of increase in our estimates of gross national product in lines 1 and 2 may be due to too low a base. But the relative difference between the entries in columns 1 and 2 for line 1 is not any greater than for line 10, another high period in the 'trend-cycle'; and that between entries in columns 1 and 3 for line 1 is appreciably smaller than for line 10. So perhaps our estimate for 1869-78 does not exaggerate the rate of increase for periods in which it is used as a base any more than does our estimate for 1914-23.

The smaller relative difference in the rate of increase between gross national product and the two 'total' production indexes in line 6 (the third high period in the trend-cycle covered by Table II j) than in lines 1 and 10 suggests a possible explanation. Both periods covered in lines 1 and 10 follow major military conflicts (the Civil War and World War I). During such wars the reduction in the rate of growth of the basic commodities that dominate production indexes is not noticeable, since these basic commodities are wanted for war purposes as much as for peacetime, or more; and by the same token, the rise in their volume after the war is not as great as in other sectors of the economy. In contrast, consumer goods of more finished character and all types of service, whose output tends to be curtailed during a major conflict, enjoy an accelerated rate of growth after it. Gross national product, being a more comprehensive measure of output than the indexes of production, gives full weight to these consumer goods and services. This hypothesis may explain why our estimates, whose changes are measured in column 1, show such a relatively greater excess in lines 1 and 10 over the changes in the Day-Persons and Warren-Pearson indexes than in line 6; and also suggest why the second trough is reached in column 1 in line 8, i.e., in the first decade covering World War I rather than in line 9, i.e., in the decade in which the postwar expansion is already felt.

The rough agreement in Table II i between the *levels* of the present estimates of national income and Martin's, and the plaus-

ible concurrence of the *fluctuations* in the rate of change between the present estimates of gross national product in 1929 prices and the indexes of production should not be attributed decisive significance. Perhaps they should be interpreted as a confirmation of the other series rather than of the comprehensive estimates assembled here. But since there is considerable independence of data underlying our estimates and the others in Tables II i and II j, the rough agreement in the levels and in the fluctuations of the rate of change from decade to decade encourages the belief that, within the margin of error suggested, the decade estimates are useful in studying long term trends in the level and composition of national product.

B BASIC TABLES

TABLE II 1

Perishable Commodities, Averages per Year by Decades, 1869-1938
(all columns except 6 in millions of dollars)

	OUTPUT DESTINED FOR DOMESTIC CONSUMPTION Current Prices (1)	1929 Prices (2)	RETAIL VALUE OF COL. 2 1929 Prices (3)	NET CHANGE IN FINISHED INVEN-TORIES 1929 Prices (4)	FLOW TO ULTIMATE USERS AT FINAL COST 1929 Prices (5)	PRICE INDEX 1929: 100 (6)	FLOW TO ULTIMATE USERS AT FINAL COST Current Prices (7)
DECADE ESTIMATES							
1 1869-78	1,737	2,341	3,512	+44	3,467	74.2	2,573
2 1874-83	2,265	3,534	5,302	+58	5,244	64.1	3,360
3 1879-88	2,658	4,612	6,918	+36	6,882	57.6	3,964
4 1884-93	2,822	5,914	7,792	+23	7,769	54.3	4,219
5 1889-98	3,043	6,030	9,046	+66	8,980	50.5	4,535
6 1894-1903	3,795	7,612	11,419	+83	11,336	49.9 ᵤ	5,657
7 1899-1908	5,124	9,451	14,178	+77	14,100	54.2	7,642
8 1904-13	6,706	11,132	16,698	+80	16,619	60.2	10,005
9 1909-18	9,338	12,356	18,536	+49	18,487	75.6	13,976
10 1914-23	13,514	13,608	20,414	+87	20,327	99.3	20,185
11 1919-28	16,529	15,775	23,664	+116	23,549	104.8	24,679
12 1924-33	15,544	17,236	25,856	+32	25,824	90.2	23,293
13 1929-38	14,716	18,232	27,350	+96	27,254	80.7	21,994
14 1914-23					20,514	98.1	20,123
AVERAGES OF ANNUAL ESTIMATES							
15 1919-28					23,895	102.6	24,505
16 1924-33					26,456	90.3	23,893
17 1929-38					29,391	79.1	23,243

COLUMN 1

LINES 1-3: sums of estimates for (1) food and kindred products; (2) cigars, cigarettes, and tobacco; (3) fuel and lighting products; (4) all other perishable commodities. For each group annual estimates are derived and averaged for the

decade. Values for 1869, 1879, and 1889 are in the series prepared by W. H. Shaw on the basis of Censuses of Manufactures. Annual estimates for 1870-78 and 1880-88 are interpolated between or extrapolated from these dates by sample data weighted by the value of output for 1869, 1879, and 1889 (*Census of Manufactures*). The years for which estimates are interpolated or extrapolated and the sample series used are indicated below.

1) Food and kindred products
    a) Manufactured
        1870-78 interpolated between 1869 and 1879 by value of coffee imports (*Production Trends in the United States since 1870* by A. F. Burns; National Bureau of Economic Research, 1934) ; gross income from peanuts, sugar, rice, condensed milk, and slaughter of animals (*Gross Farm Income and Indices of Farm Production and Prices in the United States, 1869-1937* by Frederick Strauss and L. H. Bean, Department of Agriculture Technical Bulletin 703) ; total value of butter and cheese produced (quantity production, from *Production and Consumption of Manufactured Dairy Products* by E. E. Vial, Department of Agriculture Technical Bulletin 722, multiplied by BLS price indexes) ; value of flour shipments received at New York (*Internal Commerce of the United States*).

        1880-88 interpolated between 1879 and 1889 by the same series as for 1870-78, with the following changes: value of natural mineral waters (*Mineral Resources of the United States*) is added; total value of butter and cheese produced is replaced by value of factory production (source cited for total value) ; value of flour shipments received at New York is replaced by value of wheat flour produced (*Stanford Wheat Studies,* Vol. IV, No. 2).

    b) Nonmanufactured
        1870-78 and 1880-88 interpolated between 1869 and 1879 and between 1879 and 1889 by gross income from all farm crops (*Gross Farm Income and Indices of Farm Production and Prices in the United States, 1869-1937*).

2) Cigars, cigarettes, and tobacco
    1870-78 estimated with 'all other' perishable commodities.

    1880-88 extrapolated from 1889 by quantity production of cigars, cigarettes, tobacco and snuff (*Annual Report of the Commissioner of Internal Revenue*) multiplied by appropriate price indexes.

3) Fuel and lighting products
    a) Manufactured
        1870-78 and 1880-88 interpolated between 1869 and 1879 and between 1879 and 1889 by value of crude petroleum produced (*Mineral Resources*).
    b) Nonmanufactured (anthracite and bituminous coal)
        1870-78 and 1880-88 estimated by the method outlined in *Commodity Flow and Capital Formation* (National Bureau of Economic Research, 1938), Vol. One, Table II-1, d and e.

4) All other perishable commodities
    1870-78, including cigars, cigarettes, and tobacco, interpolated between 1869 and 1879 by the sum of the estimates under food and kindred products and fuel and lighting products.

    1880-88 interpolated between 1879 and 1889 by the sum of the estimates under food and kindred products, cigars, cigarettes, and tobacco, and fuel and lighting products.

Table II 1 concluded:

LINES 4-13: averages of annual estimates. For 1884-88, see note to lines 1-3; for 1889-1938, see Shaw's 'Finished Commodities since 1879', *Occasional Paper 3* (National Bureau of Economic Research, Aug. 1941).

COLUMN 2
LINES 1-13: the annual estimates from which col. 1 is derived, converted to 1929 prices and averaged. Conversion is carried through separately for each minor group for which indexes are available. The indexes used for 1869, 1879, 1889, and subsequent years are those underlying Shaw's estimates in 1913 prices (see *Occasional Paper 3*, pp. 47-9), the index for each minor group being recomputed to a 1929 base. Annual price data for the major group for 1870-78 and 1880-88 are interpolated between 1869 and 1879 and between 1879 and 1889 by a weighted index of prices for food, fuel and lighting, drugs and chemicals, and tobacco. These price series (*Wholesale Prices, Wages and Transportation,* Part I, Senate Report 1394, Finance Committee, 52d Cong., 2d Sess., pp. 91, 107) are weighted by rough approximations to output totals for 1869, 1879, and 1889 (*Census of Manufactures*).

COLUMN 3
LINES 1-13: col. 2 multiplied by a raising ratio, 1.5001, representing the relation in 1919-33 of the retail value of output destined for domestic consumption (the value of output destined for domestic consumption at producers' prices plus transportation and distribution costs) plus the farm value of products retained by farmers for their own consumption, to the value of output destined for domestic consumption at producers' prices plus the farm value of products retained by farmers for their own consumption. Data for this ratio are from *Commodity Flow and Capital Formation,* Vol. One, Tables II-7, V-7, and V-8.

COLUMN 4
LINES 1-13: total net change in finished inventories for each period is estimated by multiplying the net change in the retail value of output destined for domestic consumption (the difference between output in the first year of the period and that in the year following the close of the period) by a constant ratio, .1587 (total net change in finished inventories for 1919-28, +$1,273.6, divided by the net change between 1919 and 1929 [$27,106.0 − $19,082.6] in the retail value of output destined for domestic consumption). Data for this ratio are from *ibid.,* Table V-7, lines A11 and A2, respectively. Finally, total net change for each period is reduced to an average per year basis.

COLUMN 5
LINES 1-13: col. 3 minus col. 4.

LINE 14: average of 1914-18, derived by the method used for lines 1-13, and of 1919-23, by the method used for lines 15-17.

LINES 15-17: averages of annual estimates in Table I 1, col. 5.

COLUMN 6
LINES 1-13: col. 1 divided by col. 2.

LINES 14-17: col. 7 divided by col. 5.

COLUMN 7
LINES 1-13: col. 5 multiplied by col. 6.

LINE 14: average of 1914-18, derived by the method used for lines 1-13, and of 1919-23, by the method used for lines 15-17.

LINES 15-17: averages of annual estimates in Table I 1, col. 2.

TABLE II 2

Semidurable Commodities, Averages per Year by Decades, 1869-1938
(all columns except 6 in millions of dollars)

	OUTPUT DESTINED FOR DOMESTIC CONSUMPTION Current Prices (1)	1929 Prices (2)	RETAIL VALUE OF COL. 2 1929 Prices (3)	NET CHANGE IN FINISHED INVEN- TORIES 1929 Prices (4)	FLOW TO ULTIMATE USERS AT FINAL COST 1929 Prices (5)	PRICE INDEX 1929: 100 (6)	FLOW TO ULTIMATE USERS AT FINAL COST Current Prices (7)
DECADE ESTIMATES							
1 1869-78	760	1,007	1,598	+53	1,546	75.5	1,167
2 1874-83	894	1,378	2,187	+59	2,128	64.9	1,381
3 1879-88	1,038	1,771	2,810	+53	2,757	58.6	1,616
4 1884-93	1,114	2,066	3,278	+35	3,244	53.9	1,748
5 1889-98	1,139	2,356	3,738	+69	3,669	48.3	1,772
6 1894-1903	1,320	2,853	4,527	+114	4,413	46.3	2,043 ←
7 1899-1908	1,810	3,536	5,609	+105	5,503	51.2	2,818
8 1904-13	2,347	4,202	6,666	+93	6,573	55.9	3,675
9 1909-18	3,288	4,640	7,361	+40	7,320	70.9	5,190
10 1914-23	5,385	4,977	7,895	+62	7,833	108.2	8,475
11 1919-28	6,967	5,842	9,267	+210	9,058	119.3	10,806
12 1924-33	6,136	6,228	9,880	−35	9,915	98.5	9,766
13 1929-38	5,058	5,789	9,184	−76	9,261	87.4	8,094
14 1914-23					7,914	107.7	8,525
AVERAGES OF ANNUAL ESTIMATES							
15 1919-28					9,190	118.5	10,889
16 1924-33					10,252	98.3	10,080
17 1929-38					9,940	85.5	8,495

COLUMN 1

LINES 1-3: averages of annual estimates. Values for 1869, 1879, and 1889 in current and 1913 prices are in the series prepared by Mr. Shaw on the basis of *Census of Manufactures* reports and other data. We adjust the 1913 price series to the 1929 level, adjustment being carried through separately for each minor group (see note to Table II 1, col. 2, lines 1-3). Annual estimates for the major group for 1870-78 and 1880-88 are interpolated by an index of physical output derived from sample data appropriately weighted. The sample series—boot and shoe shipments from Boston (*Shoe and Leather Reporter*), cotton consumption, wool consumption, and raw silk imports (*Production Trends in the United States since 1870*) —are weighted by output values for 1869, 1879, and 1889 (*Census of Manufactures*). Shaw's price index for 1869, 1879, and 1889 is adjusted to a 1929 base, adjustment being carried through separately for each minor group. Annual data for the major group for 1870-78 and 1880-88 are interpolated by the index for cloths and clothing (*Wholesale Prices, Wages and Transportation,* Part I, p. 91). Multiplication of the values in 1929 prices by this index yields the current price series.

LINES 4-13: averages of annual estimates. For 1884-88, see note to lines 1-3; for 1889-1938, see *Occasional Paper 3*.

COLUMN 2

LINES 1-3: see note to col. 1.

LINES 4-13: the annual estimates underlying col. 1, converted to 1929 prices and averaged. Conversion is carried through separately for each minor group for which indexes are available. For 1884-88 conversion is by the index described in

Table II 2 concluded:

the note to col. 1, lines 1-3; for 1889-1938, by those described in *Occasional Paper 3* (pp. 47-9), the index for each minor group being recomputed to a 1929 base.

COLUMN 3

LINES 1-13: col. 2 multiplied by a raising ratio, 1.5864, representing the relation in 1929 of the retail value of output destined for domestic consumption, $12,248,232 (the value of output destined for domestic consumption at producers' prices plus transportation and distribution costs), to the value of output destined for domestic consumption at producers' prices, $7,720,777. Data for this ratio are from *Commodity Flow and Capital Formation,* Vol. One, p. 212, col. 5 and 4, respectively.

COLUMN 4

LINES 1-13: total net change in finished inventories for each period is estimated by multiplying the net change in the retail value of output destined for domestic consumption (the difference between output in the first year of the period and that in the year following the close of the period) by a constant ratio, .4977 (total net change in finished inventories for 1919-28, +$2,066.7, divided by the net change between 1919 and 1929 [$12,248.2 − $8,096.1] in the retail value of output destined for domestic consumption). Data for this ratio are from *ibid.,* Table V-7, lines B11 and B2, respectively. Finally, total net change for each period is reduced to an average per year basis.

COLUMN 5

LINES 1-13: col. 3 minus col. 4.

LINE 14: average of 1914-18, derived by the method used for lines 1-13, and of 1919-23, by the method used for lines 15-17.

LINES 15-17: averages of annual estimates in Table I 2, col. 5.

COLUMN 6

LINES 1-13: col. 1 divided by col. 2.

LINES 14-17: col. 7 divided by col. 5.

COLUMN 7

LINES 1-13: col. 5 multiplied by col. 6.

LINE 14: average of 1914-18, derived by the method used for lines 1-13, and of 1919-23, by the method used for lines 15-17.

LINES 15-17: averages of annual estimates in Table I 2, col. 2.

TABLE II 3

Consumer Durable Commodities, Averages per Year by Decades,
1869-1938
(all columns except 6 in millions of dollars)

	OUTPUT DESTINED FOR DOMESTIC CONSUMPTION Current Prices (1)	1929 Prices (2)	RETAIL VALUE OF COL. 2 1929 Prices (3)	NET CHANGE IN FINISHED INVEN-TORIES 1929 Prices (4)	FLOW TO ULTIMATE USERS AT FINAL COST 1929 Prices (5)·	PRICE INDEX 1929: 100 (6)	FLOW TO ULTIMATE USERS AT FINAL COST Current Prices (7)
DECADE ESTIMATES							
1 1869-78	295	431	701	+15	686	68.6	470
2 1874-83	345	610	993	+20	972	56.5	549
3 1879-88	428	859	1,397	+23	1,375	49.8	685
4 1884-93	497	1,081	1,759	+12	1,747	46.0	804
5 1889-98	511	1,233	2,007	+27	1,980	41.4	820
6 1894-1903	606	1,474	2,398	+35	2,363	41.1	971
7 1899-1908	872	1,816	2,956	+34	2,922	48.0	1,403
8 1904-13	1,220	2,194	3,571	+34	3,537	55.6	1,966
9 1909-18	1,821	2,629	4,279	+60	4,219	69.3	2,924
10 1914-23	3,278	3,318	5,400	+126	5,274	98.8	5,211
11 1919-28	4,997	4,751	7,733	+137	7,596	105.2	7,991
12 1924-33	4,651	4,796	7,806	−63	7,869	97.0	7,633
13 1929-38	4,046	4,401	7,162	−50	7,212	91.9	6,628
AVERAGES OF ANNUAL ESTIMATES							
14 1919-28					6,554	104.7	6,860
15 1924-33					6,982	96.0	6,705
16 1929-38					6,080	90.1	5,475

COLUMN 1

LINES 1-3: averages of annual estimates. Values for 1869, 1879, and 1889 are in the series prepared by Mr. Shaw on the basis of *Census of Manufactures* reports. Annual estimates for 1870-78 and 1880-88 are interpolated between 1869 and 1879 and between 1879 and 1889 by an index of output computed by weighting output of semidurable commodities 2 (see note to Table II 2, col. 1) and output of construction materials 1 (see note to Table II 5, col. 1).

LINES 4-13: averages of annual estimates. For 1884-88, see note to lines 1-3; for 1889-1938, see *Occasional Paper 3*.

COLUMN 2

LINES 1-13: the annual estimates underlying col. 1, converted to 1929 prices and averaged. Conversion is carried through separately for each minor group for which indexes are available. The indexes used for 1869, 1879, 1889, and subsequent years are those underlying Shaw's estimates in 1913 prices (see *Occasional Paper 3*, pp. 47-9), the index for each minor group being recomputed on a 1929 base. Annual price data for the major group for 1870-78 and 1880-88 are interpolated between 1869 and 1879 and between 1879 and 1889 by the index for house furnishing goods (*Wholesale Prices, Wages and Transportation*, Part I, p. 91).

COLUMN 3

LINES 1-13: col. 2 multiplied by a raising ratio, 1.6275, representing the relation in 1919-33 of the retail value of output destined for domestic consumption (the value of output destined for domestic consumption at producers' prices plus trans-

Table II 3 concluded:

portation and distribution costs), to the value of output destined for domestic consumption at producers' prices. Data for this ratio are from *Commodity Flow and Capital Formation,* Vol. One, Table II-7, and a revision of Table V-7 (for which see notes to Table I 3, col. 5, above).

COLUMN 4
LINES 1-13: total net change in finished inventories for each period is estimated by multiplying the net change in the retail value of output destined for domestic consumption (the difference between output in the first year of the period and that in the year following the close of the period) by a constant ratio, .3126 (total net change in finished inventories for 1919-28, + $1,395.6, divided by the net change between 1919 and 1929 [$10,033.5 − $5,568.6] in the retail value of output destined for domestic consumption). Data for this ratio are from *ibid.,* Table V-7, line C13, and a revision of line C4 (for which see notes to Table I 3, col. 5). Finally, total net change for each period is reduced to an average per year basis.

COLUMN 5
LINES 1-13: col. 3 minus col. 4.

LINES 14-16: averages of annual estimates in Table I 3, col. 6.

COLUMN 6
LINES 1-13: col. 1 divided by col. 2.

LINES 14-16: col. 7 divided by col. 5.

COLUMN 7
LINES 1-13: col. 5 multiplied by col. 6.

LINES 14-16: averages of annual estimates in Table I 3, col. 2.

TABLE II 4

Producer Durable Commodities, Averages per Year by Decades,
1869-1938
(all columns except 6 in millions of dollars)

	OUTPUT DESTINED FOR DOMESTIC CONSUMPTION Current Prices (1)	1929 Prices (2)	RETAIL VALUE OF COL. 2 1929 Prices (3)	NET CHANGE IN FINISHED INVEN-TORIES 1929 Prices (4)	FLOW TO ULTIMATE USERS AT FINAL COST 1929 Prices (5)	PRICE INDEX 1929: 100 (6)	FLOW TO ULTIMATE USERS AT FINAL COST Current Prices (7)
DECADE ESTIMATES							
1 1869-78	314	415	481	+2	479	75.6	362
2 1874-83	398	651	754	+2	751	61.1	459
3 1879-88	477	891	1,031	+4	1,027	53.6	551
4 1884-93	506	1,070	1,238	+2	1,236	47.3	585
5 1889-98	534	1,231	1,425	+3	1,422	43.4	617
6 1894-1903	727	1,581	1,831	+7	1,823	46.0	839
7 1899-1908	1,100	2,208	2,556	+6	2,550	49.8	1,270
8 1904-13	1,382	2,618	3,030	+4	3,026	52.8	1,598
9 1909-18	2,238	3,140	3,635	+15	3,620	71.3	2,581
10 1914-23	3,593	3,665	4,243	+11	4,233	98.0	4,148
11 1919-28	4,298	4,100	4,746	+8	4,738	104.8	4,965
12 1924-33	3,733	3,867	4,477	−10	4,486	96.5	4,329
13 1929-38	3,365	3,622	4,193	−9	4.202	92.9	3,903
AVERAGES OF ANNUAL ESTIMATES							
14 1919-28					5,479	103.1	5,650
15 1924-33					5,335	96.1	5,129
16 1929-38					4,774	91.2	4,356

COLUMN 1

LINES 1-3: averages of annual estimates. Values for 1869, 1879, and 1889 in current and 1913 prices are in the series prepared by Mr. Shaw on the basis of *Census of Manufactures* reports and other data. We adjust the 1913 price series to 1929 levels, adjustment being carried through separately for each minor group (see note to Table II 1, col. 2, lines 1-13). Annual estimates for 1856-68, 1870-78, and 1880-88 are interpolated and extrapolated by an index of physical output derived from sample data appropriately weighted. The sample series used are output of pig iron and of steel ingots and castings (American Iron and Steel Association reports), gross tonnage of vessels built (*Merchant Marine Statistics, 1936,* pp. 43-5), and locomotives constructed (for 1856-80, production at the Baldwin Locomotive Works from the *History of the Baldwin Locomotive Works, 1832-1923,* Philadelphia, 1924; for 1880-89, total United States production from *Railroad Gazette,* Jan. issues). The weights are approximated from the value of output for 1869, 1879, and 1889 (*Census of Manufactures*). Shaw's price index for 1869, 1879, and 1889 is adjusted to a 1929 base, adjustment being carried through separately for each minor group. The major group index is interpolated between 1869 and 1879 and 1879 and 1889 and extrapolated to 1856 by the index for metals and implements excluding pocket knives (*Wholesale Prices, Wages and Transportation,* Part I, p. 92). Multiplication of the values in 1929 prices by this price index yields the series in current prices. The values for 1856-68 are needed for our estimates of the consumption of producer durable goods (see notes to Table II 14, col. 1).

LINES 4-13: averages of annual estimates. For 1884-88, see note to lines 1-3; for 1889-1938, see *Occasional Paper 3.*

Table II 4 concluded:

COLUMN 2

LINES 1-3: see note to col. 1.

LINES 4-13: the annual estimates underlying col. 1, converted to 1929 prices and averaged. Conversion is carried through separately for each minor group for which indexes are available. For 1884-88 conversion is by the index described in the note to col. 1, lines 1-3; for 1889-1938, by those described in *Occasional Paper 3* (pp. 47-9), the index for each minor group being recomputed to a 1929 base.

COLUMN 3

LINES 1-13: col. 2 multiplied by a raising ratio, 1.1576, representing the relation in 1919-33 of the retail value of output destined for domestic consumption (the value of output destined for domestic consumption at producers' prices plus transportation and distribution costs) to the value of output destined for domestic consumption at producers' prices. Data for this ratio are from *Commodity Flow and Capital Formation*, Vol. One, Table II-7, and a revision of Table V-7 (for which see notes to Table I 6, col. 6, above).

COLUMN 4

LINES 1-13: total net change in finished inventories for each period is estimated by multiplying the net change in the retail value of output destined for domestic consumption (the difference between output in the first year of the period and that in the year following the close of the period) by a constant ratio, .0637 (total net change in finished inventories for 1919-28, + $87.1, divided by the net change between 1919 and 1929 [$6,605.5 − $5,238.2] in the retail value of output destined for domestic consumption). Data for this ratio are from *ibid.*, Table V-7, line D13, and a revision of line D4 (for which see notes to Table I 6, col. 6, above). Finally, total net change for each period is reduced to an average per year basis.

COLUMN 5

LINES 1-13: col. 3 minus col. 4.

LINES 14-16: averages of annual estimates in Table I 6, col. 6.

COLUMN 6

LINES 1-13: col. 1 divided by col. 2.

LINES 14-16: col. 7 divided by col. 5. .

COLUMN 7

LINES 1-13: col. 5 multiplied by col. 6.

LINES 14-16: averages of annual estimates in Table I 6, col. 2.

TABLE II 5

Construction, Averages per Year by Decades, 1869-1938
(all columns except 8 in millions of dollars)

	OUTPUT OF CONSTRUCTION MATERIALS DESTINED FOR DOMESTIC CONSUMPTION Current Prices (1)	1929 Prices (2)	OUTPUT INCL. TRANSPORTATION & DISTRIBUTION COSTS 1929 Prices (3)	NET CHANGES IN ALL INVENTORIES 1929 Prices (4)	FLOW INTO CONSUMPTION 1929 Prices (5)	TOTAL CONSTRUCTION 1929 Prices (6)	NEW CONSTRUCTION 1929 Prices (7)	PRICE INDEX 1929: 100 (8)	NEW CONSTRUCTION Current Prices (9)
DECADE ESTIMATES									
1 1869-78	441	743	1,083	+17	1,066	1,997	1,496	46.9	702
2 1874-83	529	961	1,401	+33	1,368	2,562	1,920	43.8	841
3 1879-88	717	1,344	1,960	+51	1,908	3,575	2,679	43.4	1,162
4 1884-93	969	1,959	2,856	+62	2,793	5,233	3,921	42.4	1,662
5 1889-98	1,036	2,320	3,381	+40	3,341	6,260	4,690	39.7	1,862
6 1894-1903	1,130	2,464	3,591	+35	3,556	6,662	4,991	40.8	2,036
7 1899-1908	1,529	2,912	4,245	+78	4,166	7,805	5,848	46.3	2,708
8 1904-13	1,934	3,411	4,972	+76	4,897	9,173	6,873	51.1	3,512
9 1909-18	2,348	3,547	5,170	−29	5,198	9,738	7,297	57.3	4,181
0 1914-23	3,242	3,381	4,928	+27	4,901	9,181	6,879	84.1	5,785
1 1919-28	4,362	3,990	5,816	+130	5,686	10,651	7,981	102.6	8,188
2 1924-33	3,840	3,922	5,716	−151	5,867	10,991	8,235	97.6	8,038
3 1929-38	2,896	3,151	4,592	−111	4,703	8,811	6,602	91.0	6,008
4 1909-18							6,609	57.3	3,784
AVERAGES OF ANNUAL ESTIMATES									
5 1914-23							6,114	84.1	5,141
6 1919-28	4,467	4,076					8,310	102.6	8,528
7 1924-33	3,910	3,996					8,504	97.6	8,303
8 1929-38							5,797	91.0	5,274

COLUMN 1

LINES 1-3: averages of annual estimates. Values for 1869, 1879, and 1889 in current and 1913 prices are in the series prepared by Mr. Shaw on the basis of *Census of Manufactures* reports and other data. We adjust the latter to 1929 levels and interpolate annual estimates for 1870-78 and 1880-88 by an index of physical output derived from sample data appropriately weighted. The sample series used for interpolation between 1869 and 1879 are production of nails and of rails (American Iron and Steel Association reports), and of lumber (*American Lumberman*). For interpolation between 1879 and 1889, production of cement and of roofing slate (*Mineral Resources of the United States*) are also used. The weights by which these series are combined are approximations to the value of output for 1869, 1879, and 1889 (*Census of Manufactures*). Shaw's price index for 1869, 1879, and 1889 is adjusted to a 1929 base, and annual price data for 1870-78 and 1880-88 interpolated by the index for lumber and building materials (*Wholesale Prices, Wages and Transportation,* Part I, p. 91). Multiplication of the values in 1929 prices by the price index yields the series in current prices.

LINES 4-13: averages of annual estimates. For 1884-88, see note to lines 1-3; for 1889-1938, the series prepared by Mr. Shaw is used.

LINES 16 & 17: the annual estimates underlying col. 2, multiplied by the price index for building materials in *Commodity Flow and Capital Formation,* Vol. One, Table VI-1, line 2, and averaged.

Table II 5 continued:

COLUMN 2

LINES 1-3: see note to col. 1, lines 1-3.

LINES 4-13: averages of annual estimates. For 1884-88, see note to col. 1, lines 1-3; for 1889-1938, Shaw's series in 1913 prices is used, after adjustment to 1929 price levels.

LINES 16 & 17: averages of annual estimates of the output of construction materials minus the excess of exports (reduced by wholesalers' margins) over imports. *Commodity Flow and Capital Formation*, Vol. One, gives annual series on output in 1929 prices (Table VI-1, line 3), on exports and imports in current prices (Table VI-2, lines 12 and 2), and on the ratio of wholesalers' margins to exports (Table VI-2, line 8). Exports and imports in current prices are converted to 1929 prices by the price index of building materials (Table VI-1, line 2).

COLUMN 3

Col. 2 multiplied by a raising ratio, 1.4576, representing the relation in 1929 of output of construction materials destined for domestic consumption including transportation and distribution costs, $7,404.7, to the value of output destined for domestic consumption at producers' prices, $5,080.1. Transportation charges in 1929 are from *ibid.*, Table VI-1; distributive costs, from *ibid.*, Tables VI-2 and VI-3.

COLUMN 4

Total net change in all inventories for each period is estimated by applying to the net change in output (the difference between output in the terminal years of the period) a constant ratio, .4554 (total net change in inventories for 1919-28 divided by the net change in output, after mark-up, from 1919 to 1928). Total net change in inventories for 1919-28 is the sum of annual net changes in stocks held by producers, wholesalers, retailers, and consumers (derived from *ibid.*, Tables VI-1, VI-2, VI-3, and VI-4, respectively). Output, after mark-up, is estimated by multiplying output destined for domestic consumption by the mark-up ratio described in the note to col. 3. Finally, total net change for each period is reduced to an average per year basis.

COLUMN 5

Col. 3 minus col. 4.

COLUMN 6

Col. 5 multiplied by 1.8733, the ratio of total construction in 1919-33 to the cost of materials consumed, both in 1929 prices. Total construction is the sum of (a) new construction, (b) maintenance, and (c) work relief. These series are shown annually in current prices in the following sources: (a) Table I 7, col. 7, above; (b) *Construction Activity in the United States, 1915-37*, by L. J. Chawner (Domestic Commerce Series, 99, Washington, D. C., 1938) for 1919-28, and the *Survey of Current Business*, June 1943 and June 1944, for 1929-33; (c) which begins in 1933, *Survey*, June 1943. Total construction in current prices is converted to 1929 prices by the index of construction costs implicit in new construction (col. 7 of Table I 7 ÷ col. 7 of Table I 8), a revision of the index in *Commodity Flow and Capital Formation*, Vol. One, Table VI-5, line 22. This table (line 19) shows also the cost of materials consumed.

COLUMN 7

LINES 1-13: col. 5 multiplied by 1.4036, the ratio of new construction in 1919-33 (Table I 8, col. 7) to the cost of materials consumed (see note to col. 6), both in 1929 prices.

LINE 14: average of 1909-13, derived by the method used for lines 1-13, and of 1914-18, by the method used for lines 15-18.

LINES 15-18: averages of annual estimates: for 1919-38, from Table I 8, col. 7;
for 1914-18, computed by converting the values in current prices (see note to
col. 9, lines 15-18) by the procedure indicated in the notes to Table I 8 with the
public utility index extrapolated from 1919 by the Richey index given in Solomon
Fabricant, *Capital Consumption and Adjustment*, p. 178.

COLUMN 8

LINES 1-8: extrapolation of line 10 by cost of construction index described in
Part IV.

LINES 9-13: same as lines 14-18.

LINES 14-18: col. 9 divided by col. 7.

COLUMN 9

LINES 1-13: col. 7 multiplied by col. 8.

LINE 14: average of 1909-13, derived by the method used for lines 1-13, and of
1914-18, by the method used for lines 15-18.

LINES 15-18: averages of annual estimates: for 1919-38, from Table I 7, col. 7.
The procedure indicated in the notes to that table yields estimates for 1915-18 also.
That for 1915 is extrapolated to 1914 by nonfarm residential construction.

TABLE II 6

Calculation of Flow of Consumer and Producer Durable Commodities
Adjusted for Business Use of Passenger Cars, 1899-1923
(dollar figures in millions, averages per year)

	1899-1908	1904-13	1909-18	1914-18	1914-23	1919-28
1 Av. value, passenger cars & accessories used for business, domestic consumption	12.7	53.9	162.1	239.5		666.6
2 % (1) is of domestic consumption of con-sumer durables	1.5	4.4	8.9	10.8		13.3
3 % (1) is of domestic consumption of pro-ducer durables	1.2	3.9	7.2	8.1		15.5
4 Flow of consumer dur-ables, unadj. for business use of passenger cars, current prices	1,403	1,966	2,924	3,660		7,991
5 Flow of consumer dur-ables, adj., current prices	1,382	1,880	2,663	3,265	4,553	6,928
6 Flow of consumer dur-ables, unadj. for business use of passenger cars, 1929 prices	2,922	3,537	4,219	4,670		7,596
7 Flow of consumer dur-ables, adj., 1929 prices	2,878	3,381	3,843	4,166	4,644	6,585
8 Flow of producer dur-ables, unadj. for business use of passenger cars, current prices	1,270	1,598	2,581	3,554		4,965
9 Flow of producer dur-ables, adj., current prices	1,285	1,660	2,767	3,842	4,567	5,735
10 Flow of producer dur-ables, unadj. for business use of passenger cars, 1929 prices	2,550	3,026	3,620	4,151		4,738
11 Flow of producer dur-ables, adj., 1929 prices	2,580	3,144	3,881	4,487	4,670	5,472

LINE

1 It is assumed that 30 percent of the total value of the output of passenger cars and accessories for domestic use is used for business. Annual estimates of total value are from Shaw's data underlying the estimates in *Occasional Paper 3*.

2 & 3 The denominator is from *Occasional Paper 3*, Table 1.

4 Table II 3, col. 7. The 1914-18 average is estimated similarly.

5 Line 4 multiplied by (100% − line 2). The 1914-23 estimate is an average of that for 1914-18 and the average for 1919-23 derived from Table I 3, col. 2.

6 Table II 3, col. 5. The 1914-18 average is estimated similarly.

7 Line 6 multiplied by (100% − line 2). The 1914-23 estimate is an average of that for 1914-18 and the average for 1919-23 derived from Table I 3, col. 6.

LINE

8   Table II 4, col. 7. The 1914-18 average is estimated similarly.

9   Line 8 multiplied by (100% + line 3). The 1914-23 estimate is an average of that for 1914-18 and the average for 1919-23 derived from Table I 6, col. 2.

10   Table II 4, col. 5. The 1914-18 average is estimated similarly.

11   Line 10 multiplied by (100% + line 3). The 1914-23 estimate is an average of that for 1914-18 and the average for 1919-23 derived from Table I 6, col. 6.

TABLE II 7

Services Not Embodied in New Commodities
Averages per Year by Decades, 1869-1938
(all columns except 2 and 4 in millions of dollars)

	FLOW OF COMMODITIES TO ULTIMATE USERS AT FINAL COST Current Prices (1)	RATIO OF SERVICE TO COMMODITY EXPENDI-TURES BASED ON VALUES IN CURRENT PRICES (2)	SERVICES NOT EMBODIED IN NEW COMMODITIES Current Prices (3)	PRICE INDEX FOR SERVICES 1929:100 (4)	SERVICES NOT EMBODIED IN NEW COMMODITIES 1929 Prices (5)
DECADE ESTIMATES					
1 1869-78	4,210	.3552	1,496	63.4	2,358
2 1874-83	5,291	.3665	1,939	58.7	3,305
3 1879-88	6,264	.3780	2,368	55.8	4,246
4 1884-93	6,770	.3899	2,640	53.9	4,900
5 1889-98	7,127	.4061	2,894	51.5	5,618
6 1894-1903	8,671	.4298	3,727	51.4	7,244
7 1899-1908	11,642	.4569	5,410	55.3	9,784
8 1904-13	15,559	.4846	7,540	60.1	12,540
9 1909-18	21,830	.4567	9,970	69.6	14,319
10 1914-23	33,200	.4602	15,277	86.6	17,647
AVERAGES OF ANNUAL ESTIMATES					
11 1919-28	42,254	.5217	22,043	98.4	22,393
12 1924-33	40,678	.6084	24,750	98.2	25,210
13 1929-38	37,212	.6133	22,823	89.2	25,591

COLUMN 1

Flow of perishable, semidurable, and consumer durable commodities.

LINES 1-6: Tables II 1-II 3, col. 7, lines 1-6.

LINES 7-9: Tables II 1 and II 2, col. 7, lines 7-9, plus Table II 6, line 5.

LINE 10: Tables II 1 and II 2, col. 7, line 14, plus Table II 6, line 5.

LINES 11-13: Tables II 1 and II 2, col. 7, lines 15-17, plus Table II 3, lines 14-16.

COLUMN 2

LINES 1-9: Extrapolation of line 11 by ratios derived for 1909-18 from over-all estimates of consumers' outlay by W. H. Lough (*High-Level Consumption;* McGraw-Hill, 1935), and for 1869-1908 from sample expenditure data on low-income urban workers (selected from various state reports) supplemented by data for all consumer groups (*Family Expenditures in the United States;* National Resources Planning Board; Washington, D. C., 1941; and *Family Spending and Saving in Wartime;* preliminary releases by the Department of Agriculture, Bureau of Home Economics; and 'Income and Spending and Saving of City Families in Wartime', *Monthly Labor Review,* Sept. 1942). See Part III for a detailed description of the basic material and the procedures followed.

LINES 10-13: col. 3 divided by col. 1.

COLUMN 3

LINES 1-9: col. 1 multiplied by col. 2.

LINE 10: average of 1914-18, derived by the method indicated for lines 1-9, and of 1919-23, by the method indicated for lines 11-13.

LINES 11-13: averages of annual estimates in Table I 4A, col. 2.

COLUMN 4

Col. 3 divided by col. 5.

COLUMN 5

LINES 1-9: sums of separate estimates of rent and 'other' services derived by converting the current price values of each to 1929 levels. Values in current prices are derived from col. 3 by ratios extrapolated from 1919-28 (for which decade they are ascertainable from data underlying the national income estimates) on the basis of the sample data described in the notes to col. 2. See Part III for a detailed description of the basic material and the procedures followed.

Conversion of rents to 1929 prices is by the BLS cost index extrapolated from 1913 by an index based upon an unpublished study by the Russell Sage Foundation (see *Business Cycles and Business Measurements* by Carl Snyder; Macmillan, 1927; pp. 137 and 291).

Conversion of 'other' services to 1929 prices is by the price index implicit in consumer commodities (derived from Tables II 1, II 2, II 3, and II 6 by dividing the total in current prices by the total in 1929 prices).

LINE 10: average of estimates for 1914-18, derived by the method indicated for lines 1-9, and for 1919-23, by the method indicated for lines 11-13.

LINES 11-13: averages of annual estimates in Table I 4A, col. 5.

TABLE II 8: Flow of Goods to Consumers, Averages per Year by Decades, 1869-1938 (millions of dollars)

	CURRENT PRICES					1929 PRICES				
	Perishable (1)	Semi-durable (2)	Durable (3)	Services (4)	Flow of Goods to Consumers (5)	Perishable (6)	Semi-durable (7)	Durable (8)	Services (9)	Flow of Goods to Consumers (10)
DECADE ESTIMATES										
1 1869-78	2,573	1,167	470	1,496	5,706	3,467	1,546	686	2,358	8,056
2 1874-83	3,360	1,381	549	1,939	7,230	5,244	2,128	972	3,305	11,649
3 1879-88	3,964	1,616	685	2,368	8,632	6,882	2,757	1,375	4,246	15,260
4 1884-93	4,219	1,748	804	2,640	9,410	7,769	3,244	1,747	4,900	17,660
5 1889-98	4,535	1,772	820	2,894	10,021	8,980	3,669	1,980	5,618	20,248
6 1894-1903	5,657	2,043	971	3,727	12,398	11,336	4,413	2,363	7,244	25,356
7 1899-1908	7,642	2,818	1,382	5,410	17,252	14,100	5,503	2,878	9,784	32,265
8 1904-13	10,005	3,675	1,880	7,540	23,099	16,619	6,573	3,381	12,540	39,114
9 1909-18	13,976	5,190	2,663	9,970	31,799	18,487	7,320	3,843	14,319	43,970
10 1914-23	20,123	8,525	4,553	15,277	48,478	20,514	7,914	4,644	17,647	50,719
AVERAGES OF ANNUAL ESTIMATES										
11 1919-28	24,505	10,889	6,860	22,043	64,298	23,895	9,190	6,554	22,393	62,031
12 1924-33	23,893	10,080	6,705	24,750	65,428	26,456	10,252	6,982	25,210	68,900
13 1929-38	23,243	8,495	5,475	22,823	60,036	29,391	9,940	6,080	25,591	71,002

COLUMN 1
LINES 1-9: Table II 1, col. 7, lines 1-9.
LINES 10-13: *ibid.*, lines 14-17.

COLUMN 2
LINES 1-9: Table II 2, col. 7, lines 1-9.
LINES 10-13: *ibid.*, lines 14-17.

COLUMN 3
LINES 1-6: Table II 3, col. 7, lines 1-6.
LINES 7-10: Table II 6, line 5.
LINES 11-13: Table II 3, col. 7, lines 14-16.

COLUMN 4
Table II 7, col. 3.

COLUMN 5
Sum of col. 1-4.

COLUMN 6
LINES 1-9: Table II 1, col. 5, lines 1-9.
LINES 10-13: *ibid.*, lines 14-17.

COLUMN 7
LINES 1-9: Table II 2, col. 5, lines 1-9.
LINES 10-13: *ibid.*, lines 14-17.

COLUMN 8
LINES 1-6: Table II 3, col. 5, lines 1-6.
LINES 7-10: Table II 6, line 7.
LINES 11-13: Table II 3, col. 5, lines 14-16.

COLUMN 9
Table II 7, col. 5.

COLUMN 10
Sum of col. 6-9.

TABLE II 9

Flow of Goods to Consumers, Per Capita and Per Consuming Unit
Averages per Year by Decades, 1929 Prices, 1869-1938

		POPULATION	CONSUMING UNITS	FLOW OF GOODS TO CONSUMERS Per Capita	Per Consuming Unit
		(t h o u s a n d s)		(d o l l a r s)	
		(1)	(2)	(3)	(4)
DECADE ESTIMATES					
1	1869-78	43,541	28,981	185	278
2	1874-83	48,847	32,923	238	354
3	1879-88	54,762	37,370	279	408
4	1884-93	61,152	42,250	289	418
5	1889-98	67,625	47,067	299	430
6	1894-1903	74,269	51,973	341	488
7	1899-1908	81,540	57,363	396	562
8	1904-13	89,646	63,407	436	617
9	1909-18	97,743	69,417	450	633
10	1914-23	104,963	74,807	483	678
AVERAGES OF ANNUAL ESTIMATES					
11	1919-28	112,841	80,715	550	769
12	1924-33	120,619	86,580	571	796
13	1929-38	125,963	90,517	564	784

COLUMN

1 *Statistical Abstract, 1942,* p. 11, decade averages.

2 Thompson & Whelpton, *Population Trends in the United States* (McGraw-Hill, 1933), p. 169, for 1870, 1890, 1910, and 1930; interpolated on the basis of total population.

3 Col. 10 of Table II 8 divided by col. 1.

4 Col. 10 of Table II 8 divided by col. 2.

Table II 10

Net Changes in Inventories
Averages per Year by Decades, 1929 Prices, 1869-1938
(millions of dollars)

	FARM Crops (1)	Live-stock (2)	MIN-ING (3)	MFG. (4)	CON-STRUC-TION (5)	TRADE (6)	TOTAL COL. 1-6 (7)	ALL OTHER (8)	TOTAL EXCL. MONE-TARY METALS (9)
DECADE ESTIMATES									
1 1869-78	+17	+128	+2	+113	+8	+95	+363	+34	+397
2 1874-83	+16	+160	+2	+194	+14	+139	+525	+49	+574
3 1879-88	+29	+170	+4	+149	+22	+104	+479	+45	+524
4 1884-93	+28	+52	+6	+126	+27	+85	+324	+30	+354
5 1889-98	+28	+9	+8	+139	+17	+120	+322	+30	+352
6 1894-1903	+27	+127	+10	+370	+15	+180	+729	+68	+797
7 1899-1908	+22	+64	+13	+187	+34	+163	+483	+45	+528
8 1904-13	+15	−22	+14	+374	+33	+252	+665	+62	+728
9 1909-18	+10	+112	+14	+306	−12	+358	+787	+74	+861
10 1914-23	+3	+42	+11	+498	+12	+513	+1,080	+101	+1,180
11 1919-28	−7	−148	+7	+510	+56	+525	+944	+88	+1,032
12 1924-33	+8	+20	+10	−248	−66	−230	−506	−47	−553
13 1929-38	−4	+18	+6	−253	−48	−98	−380	−36	−415
AVERAGES OF ANNUAL ESTIMATES									
14 1919-28	+14	−81	+10	+567	+56	+515	+1,080	+101	+1,181
15 1924-33	−35	−7	−14	−95	+23	−183	−311	−17	−328
16 1929-38	+28	−6	ᵃ	ᵃ	+93	−138	−22ᵇ	−172ᶜ	−194

ᵃ Included with 'all other'.   ᵇ Excluding mining and manufacturing.

ᶜ Including mining and manufacturing.

Column 1

LINES 1-13: the total net change for each period is the difference between inventories in the terminal years estimated on the basis of their relation to output during the period. For each decade an index of physical output is derived, the data for 1869-1937 being those for 12 important crops recorded annually in *Gross Farm Income and Indices of Farm Production and Prices in the United States, 1869-1937*, p. 130. For 1938, these are extrapolated by data for 22 field crops (*Statistical Abstract, 1941*). The ratio of inventories as of December 31, 1918 and 1928, in 1929 prices (*Commodity Flow and Capital Formation*, Vol. One, Table VII-4) to the average index of output for 1919-28 is multiplied by the average index of output for the other periods to yield beginning and end of period inventories for each. This procedure yields two figures for each date (one by applying the beginning of the period ratio for the following period, the other by applying the end of the period ratio for the current period), which are averaged. (For the beginning of the first two decades, and for the end of the last two, only a single estimate is derived; this affects but slightly the comparability of the estimates for these decades and the others.) Finally, the total net change for each period is reduced to an average per year basis.

LINES 14-16: averages of the annual estimates of crop changes described in the note to Table I 11, col. 1.

Column 2

LINES 1-13: sums of net changes in the inventories of horses and mules on farms, cattle (including calves and milk cows), hogs, sheep and lambs. The total net

change for each period in the number of horses and mules on farms (the difference between the number on January 1 of the first year of the period and January 1 of the year following the close of the period), derived from *Agricultural Statistics, 1940,* is multiplied by 1929 prices. For cattle, hogs, sheep and lambs, the total net change in liveweight during each period (recorded annually for 1869-1937 in *Gross Farm Income and Indices of Farm Production and Prices in the United States, 1869-1937,* and derived for 1938 from the series on number in *Agricultural Statistics, 1940*) is multiplied by 1929 prices. The price data (average of farm prices on January 1, 1929 and 1930) are from the same sources as those on number and liveweight. Finally, the total net change for each period is reduced to an average per year basis.

LINES 14-16: averages of the annual estimates of livestock changes described in the note to Table I 11, col. 1.

COLUMN 3
LINES 1-13: the total net change for each period is the difference between inventories in the terminal years as estimated on the basis of their relation to output during the period. For each decade, an index of physical output is computed from annual data recorded for 1869-1930 in *Forecasting Business Cycles* by W. M. Persons (Wiley, 1931), pp. 170-1, and extrapolated through 1938 by the Federal Reserve Board index of production (*Statistical Abstract, 1941*). Stocks as of December 31, 1918 and 1928, in current prices (*Commodity Flow and Capital Formation,* Vol. One, Table VII-6, lines A2a, A2b, C1a, and C1b) are converted to 1929 prices by the appropriate indexes in *ibid.,* Table VII-7. The ratio of these beginning and end of period inventories to the average index of output for 1919-28 is multiplied by the average index of output for the other periods to yield beginning and end of period inventories for each. This procedure yields two figures for each date (see note to col. 1, lines 1-13), which are averaged. Finally, the total net change for each period is reduced to an average per year basis.

LINES 14-16: averages of annual estimates in Table I 11, col. 2.

COLUMN 4
LINES 1-13: net changes in inventories of manufactured perishable, semidurable, consumer durable, and producer durable commodities estimated on the basis of their relation to changes in output. The total net change in output for each period, estimated as the difference between the output in the terminal years in 1929 prices (see notes to col. 2 of Tables II 1-II 4), is multiplied by the ratio of the total net change in inventories, 1919-28, to the total net change in output from 1919 to 1928. Data for annual net changes in inventories, 1919-28, are from *Commodity Flow and Capital Formation,* Vol. One, Table VII-9, line 1 under Manufacturers'; those for output, from *ibid.,* Table II-7. Finally, the total net change for each period is reduced to an average per year basis.

LINES 14-16: averages of annual estimates in Table I 11, col. 3.

COLUMN 5
LINES 1-13: net changes in stocks held by consumers, estimated by multiplying net changes in all construction inventories by the ratio for 1919-28 of net changes in stocks held by consumers to net changes in all construction inventories (see Table II 5, col. 4, and the notes).

LINES 14-16: averages of annual estimates in Table I 11, col. 4.

COLUMN 6
LINES 1-13: the total net change in sales for each period in 1929 prices (the difference between sales in the terminal years) multiplied by the ratio of the total net change in inventories, 1919-28, to the total net change in sales from 1919 to 1928. Annual

Table II 10 concluded:

COLUMN 6 (*concl.*)

net changes in inventories, 1919-28, are given in *Commodity Flow and Capital Formation,* Vol. One, Table VII-9. Sales in 1919 and 1928 in current prices, by type of commodity (*ibid.,* Tables VII-5 and V-5, final approximation), are converted to 1929 prices by the appropriate indexes in *ibid.,* Table VII-7 and in Note A to Table V-7, and added. Total sales in 1929 prices for terminal years of periods back to 1899-1908 and forward to 1929-38 are extrapolated from 1919-28 by N. H. Engle's index of the physical volume of goods marketed at wholesale (given in the *Survey of Current Business,* May 1936, p. 18, through 1935, and extended through 1938 by the volume of wholesale trade and by sales by service and limited function wholesalers, both presented in the *Statistical Abstract, 1941*). Extrapolation of total sales from 1899-1908 for the terminal years of the periods back to 1869-78 is by a weighted index of crops (weight 2), slaughter of cattle, etc. (weight 1), mining (weight 1), and manufacturing (weight 6). The index of cattle slaughter is from *Gross Farm Income and Indices of Farm Production and Prices in the United States, 1869-1937.* The other series are described in the notes to col. 1, 3, and 4. The total net change in sales, 1894-1903, is the sum of total net changes for 1894-98 (estimated by the procedure indicated for the decades before 1899-1908) and for 1899-1903 (estimated by the procedure indicated for the decade 1899-1908). Finally, the total net change in inventories for each period is reduced to an average per year basis.

LINES 14-16: averages of annual estimates in Table I 11, col. 5.

COLUMN 8

LINES 1-13: col. 7 multiplied by .0935, representing the relation in 1919-28 of 'all other' to the total excluding 'all other' (see line 14, col. 7 and 8).

LINES 14-16: averages of annual estimates in Table I 11, col. 7.

COLUMN 9

LINES 1-16: col. 7 plus col. 8.

TABLE II 11
Net Changes in Inventories, Averages per Year by Decades, 1869-1938
(all columns except 2 in millions of dollars)

	TOTAL EXCL. MONE- TARY METALS 1929 Prices	PRICE INDEX 1929: 100	TOTAL EXCL. MONE- TARY METALS Current Prices	NET CHANGES IN STOCKS OF MONE- TARY METALS Current Prices	TOTAL INCL. MONE- TARY METALS Current Prices	NET CHANGES IN STOCKS OF MONE- TARY METALS 1929 Prices	TOTAL INCL. MONE- TARY METALS 1929 Prices
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
DECADE ESTIMATES							
1 1869-78	+397	83.0	+329	+51	+380	+46	+443
2 1874-83	+574	71.2	+409	+53	+462	+41	+616
3 1879-88	+524	63.6	+333	+52	+386	+40	+563
4 1884-93	+354	59.0	+209	+57	+265	+42	+395
5 1889-98	+352	53.8	+189	+42	+231	+36	+388
6 1894-1903	+797	54.6	+435	+47	+482	+48	+844
7 1899-1908	+528	62.1	+328	+71	+399	+71	+599
8 1904-13	+728	68.4	+498	+72	+570	+72	+799
9 1909-18	+861	85.4	+735	+52	+787	+53	+914
10 1914-23	+1,180	111.2	+1,313	+24	+1,337*	+27	+1,208*
11 1919-28	+1,032	113.5	+1,171	+18	+1,189	+20	+1,052
12 1924-33	−553	92.2	−510	+29	−481	+29	−524
13 1929-38	−415	82.5	−342	+122	−220	+126	−290
AVERAGES OF ANNUAL ESTIMATES							
14 1919-28	+1,181		+1,738	+18	+1,756	+20	+1,201
15 1924-33	−328		−126	+29	−97	+29	−299
16 1929-38	−194		−37	+122	+85	+126	−68

* The estimate for 1914-23 used in the summary tables and equal to the average of 1914-18, derived by the method used for lines 1-13, and of 1919-23, derived by the method used for lines 14-16, is $1,822 million in current prices and $1,334 million in 1929 prices.

COLUMN 1

Col. 9 of Table II 10.

COLUMN 2

BLS wholesale price index for all commodities adjusted to a 1929 base.

COLUMN 3

LINES 1-13: col. 1 multiplied by col. 2.

LINES 14-16: averages of annual estimates calculated from Table I 11 by deducting col. 6 from col. 8.

COLUMN 4

The estimates for the decades in 1919-38 are not strictly comparable with those covering the preceding years, owing to a difference in the procedure by which the net change in silver bullion was estimated. The series has been treated as continuous, however.

LINES 1-9: net changes in total stocks of gold, of silver bullion held in mints and assay offices, and of silver coin, minus the net change in gold stocks due to international flow. The total net change for each period is derived, then reduced to an average per year basis.

The total net change in gold stocks for each period is estimated as the difference

Table II 11 concluded:

COLUMN 4 *(concl.)*

between the values in the terminal years *(Annual Report of the Director of the Mint)*.

The total net change for each period in fine ounces of silver bullion held in mints and assay offices (the difference in stocks as of June 30 in the year preceding the period and that in the year terminating it) is multiplied by the price per fine ounce of silver at New York (average of annual prices for the period). Quantity and price data are from *ibid*.

The total net change for each period in the dollar value of stocks of silver coin (the difference in value as of June 30 in the year preceding the period and that in the year terminating it) is multiplied by the bullion value of the silver dollar at the average price of silver (average of annual prices for the period). Dollar values and price data are from *ibid*.

The total net change for each period in gold stocks due to the inflow and outflow of gold is derived from annual data on imports and exports recorded for 1869-78 in the *Statistical Abstract, 1913*, p. 461, and for other years in 'The Balance of Trade of the United States', by C. J. Bullock, J. H. Williams, and R. S. Tucker *(Review of Economic Statistics*, July 1919).

LINE 10: for the total net change in gold stocks and the net change due to international flow, the procedure is that indicated in the note to lines 1-9. For the total net change for the period in stocks of silver bullion and of silver coin, estimates for 1914-18 and 1919-23 are added. For 1914-18, the procedure is that indicated in the note to lines 1-9; for 1919-23, annual estimates in *Commodity Flow and Capital Formation*, Vol. One, Table VII-11, are added. Finally, the total net change for the period is reduced to an average per year basis.

LINES 11-13: same as lines 14-16.

LINES 14-16: averages of annual estimates in Table I 11, col. 6.

COLUMN 5

Col. 3 plus col. 4.

COLUMN 6

LINES 1-9: components of col. 4 converted to 1929 prices and added. The net change in gold stocks is the same in 1929 prices as in current. Net changes in stocks of silver bullion and in stocks of silver coin are derived by the method followed in estimating the net changes in current prices, the 1929 price being substituted for the average price for each period (see note to col. 4, lines 1-9).

LINE 10: components of col. 4 converted to 1929 prices and added. The net change in gold stocks is the same in 1929 prices as in current. Net changes in stocks of silver bullion and of silver coin are averages of estimates for 1914-18 and 1919-23. For 1914-18, the procedure (identical with that for later years) is that indicated in the note to lines 1-9; for 1919-23, annual estimates in *Commodity Flow and Capital Formation*, Vol. One, Table VII-11, are averaged.

LINES 11-13: same as lines 14-16.

LINES 14-16: averages of annual estimates in Table I 11, col. 6.

COLUMN 7

Col. 1 plus col. 6.

TABLE II 12

Net Changes in Claims Against Foreign Countries
Averages per Year by Decades, 1869-1938
(all columns except 3 in millions of dollars; + indicates an excess
of exports over imports or of additions to claims over reductions in claims;
—, an excess of imports over exports or of reductions over additions)

	NET BALANCE OF MDSE. & SILVER MOVEMENT Current Prices	FULL NET BALANCE OF CLAIMS Current Prices	PRICE INDEX 1929:100	FULL NET BALANCE OF CLAIMS 1929 Prices
	(1)	(2)	(3)	(4)
DECADE ESTIMATES				
1 1869-78	+42	−116	83.0	−140
2 1874-83	+146	−67	71.2	−94
3 1879-88	+93	−43	63.6	−68
4 1884-93	+89	−41	59.0	−69
5 1889-98	+237	−0.81	53.8	−1.51
6 1894-1903	+441	−47	54.6	−86
7 1899-1908	+513	−59	62.1	−95
8 1904-13	+495	−57	68.4	−84
9 1909-18	+1,430	+984	85.4	+1,152
10 1914-23		+1,887	110.6	+1,706
AVERAGES OF ANNUAL ESTIMATES				
11 1919-28		+968	125.6	+770
12 1924-33		+365	95.9	+380
13 1929-38		+202	83.7	+241

COLUMN 1

Averages of annual estimates calculated as the difference between exports and imports of merchandise and silver (recorded annually in Bullock, Williams, and Tucker, *op. cit.*).

COLUMN 2

LINES 1-8: col. 1 divided by the ratio of the net balance of merchandise and silver movement to the full net balance of claims (computed from data recorded in *ibid.*). The full net balance of claims is the sum of the net balances in the following commodity and service items, whenever reported: merchandise trade, interest charges, freight charges, charter of vessels, tourist expenditures, immigrant remittances, and miscellaneous. Since data for this ratio are not reported for the exact periods covered in col. 1, the ratios for those periods in the source material most closely approximating those in col. 1 are used. For some decades better conformity in the coverage of the ratio and of col. 1 is achieved by dividing col. 1 into shorter periods. The sum of the full net balance of claims for these shorter periods yields decade estimates, which are reduced to a per year basis. The ratios used, the years they cover, and the periods to which they are applied are listed herewith.

PERIOD TO WHICH RATIO IS APPLIED	YEARS COVERED BY RATIO	RATIO
1869-78		
1870-73 (fiscal years)	1850-73 (fiscal years)	.5455
1874-79 (fiscal years)	1874-95 (fiscal years)	−2.1728
1874-83 (1875-84, fiscal years)	1874-95 (fiscal years)	−2.1728
1879-88 (1880-89, fiscal years)	1874-95 (fiscal years)	−2.1728
1884-93 (1885-94, fiscal years)	1874-95 (fiscal years)	−2.1728

Table II 12 concluded:

CENTER: COLUMN 2 *(concl.)*

PERIOD TO WHICH RATIO IS APPLIED	YEARS COVERED BY RATIO	RATIO
1889-98		
1890-95 (fiscal years)	1894 (fiscal year)	3.9507
1896-99 (fiscal years)	1896-1914 (fiscal years)	−8.665
1894-1903		
1895 (fiscal year)	1894 (fiscal year)	3.9507
1896-1904 (fiscal years)	1896-1914 (fiscal years)	−8.665
1899-1908 (1900-09, fiscal years)	1896-1914 (fiscal years)	−8.665
1904-13 (1905-14, fiscal years)	1896-1914 (fiscal years)	−8.665
1909-18		
1910-14 (fiscal years)	1909	−1.5647
1914-18	actual net claims reported	

LINE 9: average of 1909-13 and 1914-18. For 1909-13 the procedure is that indicated in the note to lines 1-8; 1914-18 is an average of annual data reported in the source cited in the note to col. 1.

LINE 10: averages of 1914-18 and 1919-23. For 1914-18, see note to line 9; 1919-23 is an average of annual estimates in Table I 11, col. 9.

LINES 11-13: averages of annual estimates in Table I 11, col. 9.

CENTER: COLUMN 3

LINES 1-9: BLS wholesale price index for all commodities adjusted to a 1929 base.

LINES 10-13: col. 2 divided by col. 4.

CENTER: COLUMN 4

LINES 1-9: col. 2 divided by col. 3.

LINE 10: average of 1914-18 and 1919-23. For 1914-18 the procedure is that indicated in the note to lines 1-9 (for col. 2, see the note to col. 2, line 9; for col. 3, the source is that cited in the note to col. 3, lines 1-9); 1919-23 is an average of annual estimates in Table I 11, col. 9.

LINES 11-13: averages of annual estimates in Table I 11, col. 9.

TABLE II 13: Gross Capital Formation, Averages per Year by Decades, 1869-1938 (millions of dollars)

	CURRENT PRICES					1929 PRICES				
	Gross Producer Durable (1)	Gross Construction (2)	Net Changes in Inventories (3)	Net Changes in Claims Against Foreign Countries (4)	Gross Capital Formation (5)	Gross Producer Durable (6)	Gross Construction (7)	Net Changes in Inventories (8)	Net Changes in Claims Against Foreign Countries (9)	Gross Capital Formation (10)
DECADE ESTIMATES										
1 1869-78	362	702	380	-116	1,328	479	1,496	443	-140	2,278
2 1874-83	459	841	462	-67	1,694	752	1,920	616	-94	3,192
3 1879-88	551	1,162	386	-43	2,056	1,027	2,679	563	-68	4,202
4 1884-93	585	1,662	265	-41	2,472	1,236	3,921	395	-69	5,483
5 1889-98	617	1,862	231	-1	2,709	1,422	4,690	388	-2	6,499
6 1894-1903	839	2,036	482	-47	3,311	1,823	4,992	844	-86	7,573
7 1899-1908	1,285	2,708	399	-59	4,332	2,580	5,848	599	-95	8,932
8 1904-13	1,660	3,512	570	-57	5,684	3,144	6,873	799	-84	10,733
9 1909-18	2,767	3,784	787	984	8,323	3,881	6,609	914	1,153	12,556
10 1914-23	4,567	5,141	1,822	1,887	13,417	4,670	6,114	1,334	1,706	13,824
AVERAGES OF ANNUAL ESTIMATES										
11 1919-28	5,650	8,528	1,756	968	16,901	5,479	8,310	1,201	770	15,760
12 1924-33	5,129	8,303	-97	365	13,699	5,335	8,504	-299	380	13,920
13 1929-38	4,356	5,274	85	202	9,917	4,774	5,797	-68	241	10,743

COLUMN 1
LINES 1-6: Table II 4, col. 7, lines 1-6.
LINES 7-10: Table II 6, line 9.
LINES 11-13: Table II 4, col. 7, lines 14-16.

COLUMN 2
LINES 1-8: Table II 5, col. 9, lines 1-8.
LINES 9-13: *ibid.*, lines 14-18.

COLUMN 3
LINES 1-9: Table II 11, col. 5, lines 1-9.
LINE 10: *ibid.*, footnote to line 10.
LINES 11-13: *ibid.*, lines 14-16.

COLUMN 4
Table II 12, col. 2.

COLUMN 5
Sum of col. 1-4.

COLUMN 6
LINES 1-6: Table II 4, col. 5, lines 1-6.
LINES 7-10: Table II 6, line 11.
LINES 11-13: Table II 4, col. 5, lines 14-18.

COLUMN 7
LINES 1-8: Table II 5, col. 7, lines 1-8.
LINES 9-13: *ibid.*, lines 14-18.

COLUMN 8
LINES 1-9: Table II 11, col. 7, lines 1-9.
LINE 10: *ibid.*, footnote to line 10.
LINES 11-13: *ibid.*, lines 14-16.

COLUMN 9
Table II 12, col. 4.

COLUMN 10
Sum of col. 6-9.

TABLE II 14

Consumption and Net Production, Producer Durable Commodities
and Construction, Averages per Year by Decades, 1869-1938
(millions of dollars)

	CONSUMPTION OF PRODUCER DURABLES 1929 Prices (1)	NET PRODUCER DURABLES 1929 Prices (2)	Current Prices (3)	CONSUMPTION OF CONSTRUCTION 1929 Prices (4)	NET CONSTRUCTION 1929 Prices (5)	Current Prices (6)
DECADE ESTIMATES						
1 1869-78	274	204	155	720	776	365
2 1874-83	401	351	215	840	1,080	473
3 1879-88	579	448	241	1,008	1,670	726
4 1884-93	807	429	204	1,293	2,627	1,115
5 1889-98	1,026	396	172	1,550	3,140	1,247
6 1894-1903	1,230	593	274	1,947	3,044	1,243
7 1899-1908	1,544	1,037	518	2,329	3,519	1,631
8 1904-13	2,010	1,134	600	2,844	4,029	2,061
9 1909-18	2,524	1,356	970	3,344[a]	3,953[b]	2,268[b]
10 1914-23	3,142	1,529	1,493	4,132	1,982	1,644
AVERAGES OF ANNUAL ESTIMATES						
11 1919-28	3,878	1,601	1,592	4,866	3,444	3,547
12 1924-33	4,497	838	930	5,058	3,446	3,513
13 1929-38	4,472	301	315	5,227	570	637

[a] Consumption, comparable with construction in Table II 5, line 14, and used in
the summary tables, is $1,984 million in current prices and $3,442 million in
1929 prices.
[b] Net construction, comparable with Table II 5, line 14, and used in the summary
tables, is $1,801 million in current prices and $3,167 million in 1929 prices.

COLUMN 1
LINES 1-10: extrapolated from line 11 by averages of annual estimates derived for
any given year as the arithmetic mean of the flow (before inventory change) of pro-
ducer durable commodities for the thirteen preceding years. Annual estimates of the
flow are calculated by multiplying output adjusted for the business use of passenger
cars (see notes to Table II 4, col. 1 and 2, and Table II 6, line 1) by the mark-up
ratio described in the note to Table II 4, col. 3.

LINES 11-13: averages of annual estimates derived by apportioning total consump-
tion of capital goods excluding war (Table I 16, col. 10) between producer durable
commodities and construction on the basis of the distribution of the series under-
lying col. 1 and 4, lines 1-10, extended through the 1919-28 decade.

COLUMN 2
LINES 1-6: col. 5 of Table II 4 minus col. 1.

LINES 7-10: line 11 of Table II 6 minus col. 1.

LINES 11-13: col. 5 of Table II 4, lines 14-16, minus col. 1.

COLUMN 3
LINES 1-9: col. 2 multiplied by col. 6 of Table II 4 (i.e., col. 7 of Table II 4,
lines 1-6, and line 9 of Table II 6 minus the product of col. 1, lines 1-9, and col. 6
of Table II 4, lines 1-9).

LINE 10: average of 1914-18, derived by the method used for lines 1-9, and of
1919-23, derived by the method used for lines 11-13.

LINES 11-13: difference between the flow of producer durables at final cost (Table II 4, col. 7, lines 14-16) and consumption, estimated by a procedure analogous to that by which the values in 1929 prices (see notes to col. 1, lines 11-13) were derived.

COLUMN 4

LINES 1, 3-9: line 11 minus consumption of war construction (Table I 10, col. 6) extrapolated by estimates derived for any given decade as the arithmetic mean of new construction for the five preceding decades and the current decade, the two terminal decades being given half weight. New construction for 1869-78 and later decades is shown in Table II 5. The value for 1869-78, in 1929 prices, is extrapolated for 1819-28, 1829-38, 1839-48, 1849-58, and 1859-68 by an index combining (a) net changes in population in places of 2,500 and over (weighted 5), (b) net changes in population of places under 2,500 (weighted 2) (both derived from *Population Trends in the United States,* p. 20), and (c) net changes in national income adjusted by the cost of living (weighted 3) (from *National Income in the United States, 1799-1938* by R. F. Martin). The value of new construction, 1834-43, is by straight line interpolation between values for 1829-38 and 1839-48. The values for 1844-53, 1854-63, and 1864-73 are interpolated between those for 1839-48, 1849-58, 1859-68, and 1869-78 by decade averages, at 5-year intervals, of the value of building permits per capita in 1913 prices, for varying numbers of cities, derived from unpublished estimates prepared by J. R. Riggleman.

LINE 2: interpolated between lines 1 and 3 with col. 1 as index.

LINE 10: estimate for 1914-23 comparable with lines 1-9 plus consumption of war construction estimated by the procedure indicated for Table I 10, col. 5.

LINES 11-13: averages of annual estimates. See notes to col. 1, lines 11-13, for the method of deriving consumption of construction excluding war consumption (for the latter see Table I 10, col. 6).

COLUMN 5

Col. 7 of Table II 5 minus col. 4.

COLUMN 6

LINES 1-9: col. 5 multiplied by col. 8 of Table II 5 (i.e., col. 9 of Table II 5 minus the product of col. 4, lines 1-9, and col. 8 of Table II 5, lines 1-9).

LINES 10-13: difference between total new construction (Table II 5, col. 9) and consumption, estimated by a procedure analogous to that by which the values in 1929 prices (see notes to col. 4 and col. 1, lines 10-13) were derived.

TABLE II 15

Net Capital Formation, Averages per Year by Decades, 1869-1938
(millions of dollars)

	CURRENT PRICES					1929 PRICES				
	Net Producer Durables (1)	Net Construction (2)	Net Changes in Inventories (3)	Net Changes in Claims against Foreign Countries (4)	Net Capital Formation (5)	Net Producer Durables (6)	Net Construction (7)	Net Changes in Inventories (8)	Net Changes in Claims against Foreign Countries (9)	Net Capital Formation (10)
DECADE ESTIMATES										
1 1869-78	155	365	380	-116	784	204	776	443	-140	1,284
2 1874-83	215	473	462	-67	1,082	351	1,080	616	-94	1,952
3 1879-88	241	726	386	-43	1,309	448	1,670	563	-68	2,615
4 1884-93	204	1,115	265	-41	1,543	429	2,627	395	-69	3,382
5 1889-98	172	1,247	231	-1	1,650	396	3,140	388	-2	3,922
6 1894-1903	274	1,243	482	-47	1,952	593	3,044	844	-86	4,395
7 1899-1908	518	1,631	399	-59	2,488	1,037	3,519	599	-95	5,059
8 1904-13	600	2,061	570	-57	3,174	1,134	4,029	799	-84	5,878
9 1909-18	970	1,801	787	984	4,542	1,356	3,167	914	1,153	6,590
10 1914-23	1,493	1,644	1,822	1,887	6,846	1,529	1,982	1,334	1,706	6,550
AVERAGES OF ANNUAL ESTIMATES										
11 1919-28	1,592	3,547	1,756	968	7,863	1,601	3,444	1,201	770	7,016
12 1924-33	930	3,513	-97	365	4,711	838	3,446	-299	380	4,365
13 1929-38	315	637	85	202	1,239	301	570	-68	241	1,044

COLUMN 1
Table II 14, col. 3.

COLUMN 2
LINES 1-8: Table II 14, col. 6, lines 1-8.
LINE 9: *ibid.*, footnote b to line 9.
LINES 10-13: *ibid.*, lines 14-17.

COLUMNS 3 & 4
See Table II 13, notes to col. 3 and 4.

COLUMN 5
Sum of col. 1-4.

COLUMN 6
Table II 14, col. 2.

COLUMN 7
LINES 1-8: Table II 14, col. 5, lines 1-8.
LINE 9: *ibid.*, footnote b to line 9.
LINES 10-13: *ibid.*, lines 14-17.

COLUMNS 8 & 9
See Table II 13, notes to col. 8 and 9.

COLUMN 10
Sum of col. 6-9.

TABLE II 16

Gross and Net National Product, * Averages per Year by Decades, 1869-1938
(millions of dollars)

	CURRENT PRICES					1929 PRICES				
	FLOW OF GOODS TO CONSUMERS	CAPITAL FORMATION		NATIONAL PRODUCT		FLOW OF GOODS TO CONSUMERS	CAPITAL FORMATION		NATIONAL PRODUCT	
		Gross	Net	Gross	Net		Gross	Net	Gross	Net
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
DECADE ESTIMATES										
1 1869-78	5,706	1,328	784	7,033	6,489	8,056	2,278	1,284	10,334	9,340
2 1874-83	7,230	1,694	1,082	8,924	8,312	11,649	3,192	1,952	14,842	13,601
3 1879-88	8,632	2,056	1,309	10,688	9,941	15,260	4,202	2,615	19,462	17,875
4 1884-93	9,410	2,472	1,543	11,882	10,953	17,660	5,483	3,382	23,143	21,042
5 1889-98	10,021	2,709	1,650	12,730	11,671	20,248	6,499	3,922	26,747	24,170
6 1894-1903	12,398	3,311	1,952	15,709	14,350	25,356	7,573	4,395	32,929	29,751
7 1899-1908	17,252	4,332	2,488	21,584	19,740	32,265	8,932	5,059	41,197	37,324
8 1904-13	23,099	5,684	3,174	28,783	26,273	39,114	10,733	5,878	49,847	44,992
9 1909-18	31,799	8,323	4,542	40,122	36,341	43,970	12,556	6,590	56,526	50,560
10 1914-23	48,478	13,417	6,846	61,895	55,324	50,719	13,824	6,550	64,543	57,269
AVERAGES OF ANNUAL ESTIMATES										
11 1919-28	64,298	16,901	7,863	81,199	72,160	62,031	15,760	7,016	77,791	69,047
12 1924-33	65,428	13,699	4,711	79,127	70,139	68,900	13,920	4,365	82,820	73,265
13 1929-38	60,036	9,917	1,239	69,952	61,274	71,002	10,743	1,044	81,745	72,045

* Peacetime concept, see Part I.

COLUMN
1 Table II 8, col. 5.
2 Table II 13, col. 5.
3 Table II 15, col. 5.
4 Col. 1 plus col. 2.
5 Col. 1 plus col. 3.

COLUMN
6 Table II 8, col. 10.
7 Table II 13, col. 10.
8 Table II 15, col. 10.
9 Col. 6 plus col. 7.
10 Col. 6 plus col. 8.

TABLE II 17

Gross and Net National Product,* Per Capita and Per Gainfully Occupied, Averages per Year by Decades, 1929 Prices, 1869-1938

			GROSS NATIONAL PRODUCT		NET NATIONAL PRODUCT	
	POPULATION	GAINFULLY OCCUPIED	Per Capita	Per Gainfully Occupied	Per Capita	Per Gainfully Occupied
	(thousands)	(thousands)	(dollars)	(dollars)	(dollars)	(dollars)
	(1)	(2)	(3)	(4)	(5)	(6)
DECADE ESTIMATES						
1 1869-78	43,541	14,440	237	716	215	647
2 1874-83	48,847	16,740	304	887	278	812
3 1879-88	54,762	19,528	355	997	326	915
4 1884-93	61,152	22,729	378	1,018	344	926
5 1889-98	67,625	25,580	396	1,046	357	945
6 1894-1903	74,269	28,311	443	1,163	401	1,051
7 1899-1908	81,540	31,792	505	1,296	458	1,174
8 1904-13	89,646	35,954	556	1,386	502	1,251
9 1909-18	97,743	39,329	578	1,437	517	1,286
10 1914-23	104,963	41,927	615	1,539	546	1,366
AVERAGES OF ANNUAL ESTIMATES						
11 1919-28	112,841	44,904	689	1,732	612	1,538
12 1924-33	120,619	47,953	687	1,727	607	1,528
13 1929-38	125,963	50,307	649	1,625	572	1,432

* Peacetime concept, see Part I.

COLUMN

1 Table II 9, col. 1.

2 Estimates for 1870, 1880, 1890, 1900, 1910, 1920, and 1930 prepared by Daniel Carson for 'Labor Supply and Employment' (WPA, National Research Project, Nov. 1939, mimeo.) and revised in 'Industrial Composition of Manpower in the United States, 1870-1940', a paper prepared for the Conference on Research in Income and Wealth, 1945. The decennial figures were interpolated on the basis of total population, by decades through 1914-23, annually for 1919-38.

3 Col. 9 of Table II 16 divided by col. 1.

4 Col. 9 of Table II 16 divided by col. 2.

5 Col. 10 of Table II 16 divided by col. 1.

6 Col. 10 of Table II 16 divided by col. 2.