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Income Originating in Trade, 1869-1929

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TO ESTIMATE income in trade, the best starting point would appear to be the decennial estimates of numbers engaged, derived directly or indirectly from the census occupation count. In Table 1 these are given

TABLE 1
Employees and Proprietors in Wholesale and Retail Trade, 1869-1929

	1869	1879	1889	1899	1909	1919	1929
	(thousands)						
Persons engaged ^a	785	1,155	1,825	2,460	3,366	4,064	6,033
	(per cent)						
Adjustments ^b							
Bars and restaurants	4.7	6.1	7.6	9.0	10.4	11.9	13.3
Manufacturers' sales branches	0.0	1.0	2.1	3.1	4.2	5.2	5.2
Service establishments	0.0	0.6	1.2	1.8	2.4	3.0	3.0
Unidentified	8.1	8.1	8.1	8.1	8.1	8.1	8.1
Total adjustments	12.8	15.8	19.0	22.0	25.1	28.2	29.6
	(thousands)						
Employment, NID concept ^c	885	1,337	2,172	3,001	4,211	5,210	7,821
Estimated breakdown ^d							
Wholesale trade							
Employees	208	321	529	704	955	1,142	1,631
Proprietors	52	65	83	92	97	103	113
Retail trade							
Employees	196	349	698	1,132	1,857	2,480	4,215
Proprietors	429	602	862	1,073	1,302	1,485	1,862

^a Daniel Carson, "Changes in the Industrial Composition of Manpower," in Volume Eleven (1949) of *Studies in Income and Wealth*, p. 47. Figures are from the occupation census of each following year.

^b The National Income Division uses the census of distribution industry concept, which is broader than Carson's (see Harold Barger, *Distribution's Place in the American Economy since 1869*, Princeton University Press for NBER, 1955, pp. 102-103). In 1869 bars and restaurants were about one-third as important, relative to liquor stores and groceries, as in 1939 (*ibid.*, p. 141). Manufacturers' sales branches and service establishments are assumed to have been negligible in 1869.

^c 1869-1919: Carson's figures raised by the adjustments indicated. 1929: *National Income Supplement, 1954, Survey of Current Business*, Dept. of Commerce. Data are intended to measure full-time equivalent employees.

^d Proprietors were segregated on the basis of figures for auctioneers, retail dealers, wholesale dealers, importers, exporters, proprietors, managers, officials, sales agents, and undertakers (Alba M. Edwards, "Comparative Occupation Statistics for the United States, 1870 to 1940," *1940 Census of Population*, p. 110). Wholesale and retail trade were separated on the basis of value added (see Table 5 of this paper).

in the form published by Carson¹ and are adjusted for comparability to the somewhat wider industry definition used by the National Income Division (NID).²

Employment

Some hesitation may be felt about using numbers engaged to represent employment, but the 1929 figure used by the NID is based on the establishment count of the distribution census, and the numbers engaged are really used for extrapolation. Rates of remuneration differ appreciably between employees and proprietors, and between wholesale and retail trade. Therefore an attempt had to be made to distribute total employment among these categories (lower half of Table 1).

Earnings of Employees

To gauge the behavior of rates of remuneration, we have only the hours per week and hourly wages in retail trade (first two lines of Table 2).³ These refer only to retail employees, and the income per employee in wholesale trade merely preserves the differential observed in the earnings of wholesale and retail employees in 1929. The series on annual income per employee can be roughly checked with the Indiana census of 1879.⁴ This inquiry—almost the only census of distribution prior to 1929—included both wholesale and retail establishments, but did not segregate them. It reported annual average wages per employee at \$417, somewhat below the figure indicated in Table 2. But since the Indiana figure doubtless covers part-time employees, and mine is supposed—more or less—to refer to full-time employees, the correspondence is perhaps sufficiently close.⁵

Earnings of Proprietors

Next we are faced with the unwelcome need to estimate proprietors' earnings on the basis of those of employees. The relatively small

¹ Daniel Carson, "Changes in the Industrial Composition of Manpower since the Civil War," in Volume Eleven (1949) of *Studies in Income and Wealth* (see the list of publications of the conference at the back of this volume).

² *National Income Supplement, 1954, Survey of Current Business*, Dept. of Commerce.

³ These series were constructed in connection with the National Bureau productivity study and are described briefly in Harold Barger, *Distribution's Place in the American Economy since 1869*, Princeton University Press for NBER, 1955, pp. 11-12 and 109.

⁴ *First Annual Report, 1879*, Indiana Department of Statistics and Geology, 1880, pp. 149-208. The summary, which reflects adjustments for incomplete returns, is on page 208.

⁵ In 1929 the number of full-time equivalent employees in trade was about 10 per cent less than the number of full-time and part-time employees. However, the extrapolation for earlier years is based on numbers engaged, and the proportion of part-time employees may have varied.

INCOME ORIGINATING IN TRADE, 1869-1929

 TABLE 2
 Data Needed for Calculating Income, 1869-1929

	1869	1879	1889	1899	1909	1919	1929
Hours per week (actual), retail trade ^a	66	66	66	65	59	56	54
Hourly wages, retail trade ^b	\$0.167	\$0.130	\$0.154	\$0.175	\$0.209	\$0.480	\$0.543
Wholesale trade:							
Annual income per employee ^c	\$783	\$610	\$722	\$809	\$875	\$1,911	\$2,083
Assumed multiplier ^d	2.9	2.7	2.5	2.3	2.1	1.9	1.67
Annual income per proprietor ^e	\$2,271	\$1,647	\$1,805	\$1,861	\$1,838	\$3,631	\$3,479
Retail trade:							
Annual income per employee ^c	\$533	\$415	\$491	\$551	\$596	\$1,301	\$1,418
Assumed multiplier ^d	1.5	1.4	1.3	1.2	1.1	1.0	0.94
Annual income per proprietor ^e	\$800	\$581	\$638	\$661	\$656	\$1,301	\$1,333

^a Harold Barger, *Distribution's Place in the American Economy since 1869*, Princeton University Press for NBER, 1955, p. 11.

^b *ibid.*, p. 109. Some revision seems desirable in the data given in my book for average weekly wages in trade in 1869, 1879, and 1889. The figure for 1899 (\$11.93) appears to be well based. It rests on substantial surveys for 1895-1896 (*Annual Report of the Commissioner of Labor, 1895-96*, Bureau of Labor); and 1898, New Jersey, New York, and Wisconsin, and 1902, Massachusetts (see annual reports of appropriate statistical bureaus). Projection back to 1879 must depend heavily on the Indiana census of that year and on data for 2,074 employees of Chicago stores in 1882 (*Second Biennial Report, 1882*, Illinois Bureau of Labor Statistics, pp. 352-354). I now estimate weekly wages in trade at \$10.5 in 1889 and \$9.0 in 1879 (instead of \$11.00 and \$9.91 respectively). The 1869 figure has to be estimated from women's wages. We have data for 2,107 female employees in 1870, 1,270 in 1871, and 123 in 1884. Most were in Boston (see *Annual Reports*, Massachusetts Bureau of Labor Statistics). For 1879 we have the Indiana census, which reported 2,052 women out of a total of 17,136 employees of both sexes. If we assume that the over-all average moved similarly to women's wages during these years, we obtain a figure of \$11.5 for weekly wages in trade in 1869 (instead of \$9.7). The necessary denominator (nominal hours per week) is 69 for 1869 and 1879, and 68 for 1889 (Barger, Table 5, note f).

^c 1929: *National Income Supplement, 1954, Survey of Current Business*, Dept. of Commerce. Other years: Extrapolated on basis of hours per week and hourly wages in retail trade.

^d See discussion in text.

^e 1929: *National Income Supplement, 1954*. Other years: Derived from annual income per employee.

investment required to enter trade, and the similar nature of work performed by proprietor and employee, ensure that movements in remuneration will correspond, at least roughly. That their earnings have been equal or have even remained in a stable ratio seems unlikely, however. In 1929 the annual earnings of proprietors were 1.67 times those of employees in wholesale, and the corresponding ratio was 0.94 for retail trade. General principles suggest that in wholesale trade the ratio was somewhat higher in days when corporations were less important, and income which now takes the form of corporate profits then accrued to individual proprietors. In retail trade incorporation has

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been somewhat less important than in wholesale, but here also the ratio probably was higher before the advent of the corporation.

Two scraps of information bear upon this question. Some data from the Indiana census of 1879 are relevant. Total sales, wholesale and retail, for the state were \$300 million and total purchases \$241 million, leaving (apart from possible changes of inventory, which were not reported) \$59 million for value added. Wages and other expenses were \$10 million each, leaving \$39 million for compensation of proprietors. If there was only one proprietor for each of the 19,000 establishments, his earnings were about \$2,000 on the average, or five times the mean income per employee: this is an upper limit. Since expenses other than wages were only one-sixth of value added, compared with two-fifths in 1929 (Table 3), it seems likely they are understated in the Indiana data

TABLE 3
Estimate of Value Added by Trade, 1929
(billions of dollars)

	<i>Wholesale</i>	<i>Retail</i>	<i>Total</i>
Employee compensation	3.4	6.0	9.4
Unincorporated profits	0.4	2.5	2.9
Corporate profits	0.3	0.4	0.7
Interest	^a	^a	0.1
Income originating	4.0	9.0	13.1
Expenses ^b	3.2	5.4	8.6
Value added	<u>7.2</u>	<u>14.4</u>	<u>21.6</u>

^a Less than 0.05.

^b Other than employee compensation and interest paid to individuals.

Source: Figures for income originating (before inventory valuation adjustment) are from the *National Income Supplement, 1954, Survey of Current Business, Dept. of Commerce*, Tables 14, 17, 18, 23, and 24; also p. 77. Figures for expenses are based on the 1929 Census of Distribution.

for 1879. But there probably were establishments with more than one proprietor. If expenses other than wages are assumed to be twice the reported amount (approximating the 1929 ratio to value added), and if an average of two proprietors per establishment is assumed, income per proprietor is \$760 for Indiana in 1879 (\$29 million ÷ 38,000), or 1.5 times my income per employee (\$510, the weighted average of retail and wholesale in Table 2, using weights in Table 1). The multipliers I assumed, 2.7 for wholesale, 1.4 for retail trade, in 1879 (Table 2), have a weighted average slightly above 1.5. The Indiana data are thus consistent with the existence of higher ratios in 1879 for income per proprietor to income per employee than in 1929.

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The other scrap of information also relates to value added. The income estimates to which the work leads (Table 4) are independent of figures for value added obtained from retail and wholesale margins. In Table 5 the latter figures are reproduced from my previous study,⁶ then are adjusted for the present purpose. The table shows the resulting

TABLE 4
Income Originating in Trade, 1869-1929
(billions of dollars)

	1869	1879	1889	1899	1909	1919	1929
Wholesale trade:							
Employee compensation	0.16	0.20	0.38	0.57	0.84	2.18	3.40
Unincorporated profits	0.12	0.11	0.15	0.17	0.18	0.37	0.38
Retail trade:							
Employee compensation	0.10	0.14	0.34	0.62	1.11	3.23	5.98
Unincorporated profits	0.34	0.35	0.55	0.71	0.85	1.93	2.48
Wholesale and retail trade combined:							
Employee compensation	0.27	0.34	0.72	1.19	1.94	5.41	9.37
Unincorporated profits	0.46	0.46	0.70	0.88	1.03	2.31	2.87
Corporate profits					0.60	1.23	0.76
Interest						0.04	0.08
Income originating	0.73	0.80	1.42	2.07	3.57	8.98	13.08

Source: All data for 1929 are reproduced from *National Income Supplement, 1954, Survey of Current Business*, Dept. of Commerce. For other years, employee compensation and unincorporated profits are derived from Tables 1 and 2. Corporate profits and interest were estimated for 1919 from Simon Kuznets, *National Income and Its Composition, 1919-1938*, National Bureau of Economic Research, 1941, pp. 717-718. Corporate profits in 1899 and earlier years are assumed to have been negligible, and in 1909 to have been half the 1919 level. Interest is assumed to have been negligible in 1909 and earlier years.

ratio of the income estimates to the value added estimates, which appears to have an upward trend from something under 0.5 in 1869 and 1879 to about 0.6 in 1929.

Is this trend plausible? It is not confirmed by the Indiana ratio, which is 0.8 for 1879. Even if expenses other than employee compensation are doubled, the ratio still exceeds 0.6. Such expenses include a wide range of items, the main ones probably being rent, interest, advertising, and store fixtures and supplies. There seems to be no convincing reason for these to have declined as a fraction of value added. But if the ratio of income to value added did not rise, either value added must have risen more steeply, or income originated more slowly, than my figures indicate. Perhaps the data on value added are

⁶ Barger, *op. cit.*

INCOME ORIGINATING, BY SECTOR

TABLE 5
Comparison of Income Originating with Value Added, 1869-1929

	1869	1879	1889	1899	1909	1919	1929
(dollars)							
Wholesale trade, value added:							
Before adjustment (millions) ^a	391	491	724	907	1,586	3,903	4,425
After adjustment (billions) ^b	0.64	0.80	1.18	1.48	2.6	6.4	7.2
Retail trade, value added:							
Before adjustment (millions) ^a	961	1,235	1,896	2,578	4,913	12,852	15,792
After adjustment (billions) ^b	0.88	1.13	1.73	2.35	4.5	11.7	14.4
Wholesale and retail trade combined:							
Value added, adjusted as above (billions)	1.52	1.93	2.91	3.83	7.1	18.1	21.6
Income originating (billions)	0.73	0.80	1.42	2.07	3.57	8.98	13.08
(ratio)							
Income to value added	0.48	0.41	0.49	0.54	0.51	0.50	0.61

^a From worksheets underlying Table 20 in my book (see source note).

^b Data for 1929 from Table 3 above.

Source: Unadjusted value added was obtained by applying retail and wholesale markups to the volume of finished goods entering distribution. See Harold Barger, *Distribution's Place in the American Economy since 1869*, Princeton University Press for NBER, 1955, ch. 5 and Appendix B. These figures contain a probable overstatement which is discussed on pp. 123-127. However, inasmuch as they refer only to finished goods (*ibid.*, pp. 24-25), they are two low for our purpose. Therefore the adjusted figures have been used here to extrapolate the 1929 data quoted in Table 4.

at fault. Yet the comparison argues for ratios of earnings per proprietor to earnings per employee in the early years of the period at least as high as those given in Table 2. The ratios in Table 2 are of course largely guesswork, as has been explained.

Income Originating

Multiplication of the employment estimates in Table 1 by the rates of remuneration in Table 2 yields the most important components of the income totals in Table 4. We need only add corporate profits and interest to obtain income originating in trade.

Figures in Table 4 for 1929 are those offered by the NID in the *National Income Supplement, 1954*, except for the inventory valuation adjustment. There is no way to calculate this item for earlier years.

Real Earnings and Incomes

Table 6 places two leading series upon a constant price basis by means of a cost-of-living index—since we are dealing with income. The price

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TABLE 6
Real Hourly Earnings and Income per Person in Trade, 1869-1929

	1869	1879	1889	1899	1909	1919	1929
	(dollars)						
Hourly earnings, retail trade ^a	0.167	0.130	0.154	0.175	0.209	0.480	0.543
Annual income per person, retail and wholesale trade combined (thousands) ^b	0.82	0.60	0.66	0.69	0.85	1.72	1.67
	(index: 1929 = 100)						
Cost of living ^c	52	37	36	35	48	101	100
	(dollars)						
Real hourly earnings ^d	0.32	0.35	0.43	0.49	0.44	0.47	0.543
Real income per person (thousands) ^d	1.6	1.6	1.8	2.0	1.8	1.7	1.67

^a From Table 2.

^b From Tables 1 and 4.

^c *Historical Statistics of the United States, 1789-1945*, Bureau of the Census, 1949, Series L 38 (Burgess) and L 41 (Bureau of Labor Statistics).

^d In 1929 prices.

correction for 1869 is highly uncertain. But between 1879 and 1929 the real hourly earnings of employees increased by about one-third, or one-half of one per cent yearly. However, the decline in hours (well documented) coupled with the decline in proprietors' remuneration (assumed here, rather than proved) yields a figure for real income originating per person at work which is no higher in 1929 than in 1879. It would seem doubtful whether the economic status of the worker in trade has kept pace with that of the working population at large.

C O M M E N T

THOMAS S. BERRY, University of Richmond

Harold Barger and Theodore Marburg are both standing on the frontiers of our statistical knowledge about income originating in trade in the United States since 1799, and everybody who has faced similar problems is compelled to admire them for their courage and equanimity in exploring unknown territory. The spirit of these excellent papers, the general approach of this undertaking, and indeed the guiding principle of the National Bureau, are epitomized in a remark of Lord Kelvin in an 1883 address on physical science: "when you can measure what you are speaking about and express it in numbers you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind."¹

¹ Sir William Thomson, *Popular Lectures and Addresses*, 3 vols., London, Macmillan, 1891, Vol. 1, pp. 80-81.

The problems of Barger and Marburg in using census data as guideposts or points of verification resemble those facing paleontologists trying to reconstruct a skeleton or the complete physical structure of a prehistoric being on the basis of a tooth or shinbone. In some ways, the terminology and techniques of synthetic statistics (and I use the phrase without the slightest intention of reflecting on their methods or results) suggest forecasting into the past—or postcasting or retrocasting. One of the principal differences is that forecasts can be verified or not by future actual experience, but postcasts only by future excavations of data believed to be more accurate.

My remarks (the observations of an average reader, not an expert) deal with three aspects of postcasting: the sources of the data used as ground references; possibilities of improving the technique and terminology; and the question of individual versus composite judgment in making estimates of unknown magnitudes or measurements.

SOURCES OF THE DATA

Barger and Marburg both decided to use the census, for want of more pertinent data, as a starting point. The latter gives us an admirable summary of his fruitless search for other sources and points out that the census is the weakest point in his chain of inferences. To his suggestions for further search for sources I add the search for other series which might be good raw material for the derivation of annual rather than decennial income estimates. The census materials are useful primarily for long-term trends, which are bound to be deflected by the position of the census years in their respective business cycles. Since a census is almost always biased downward, there is need to develop a long-term upward correction or adjustment, perhaps on the premise that the degree of bias has tended to decline on a long-term basis. For other sources of income data I nominate the annual Chamber of Commerce reports in the leading cities and commercial journals such as the *Cincinnati Price Current*, and the *San Francisco Price Current*.² It might be worthwhile to experiment with the use of the amount of advertising in the early newspapers. This would require constructing a total advertising bill, assuming a ratio (or set of ratios) of advertising to sales or to income (or both), and finding ways and means of adding in allowances for the huge number of scattered rural retailers who were not advertisers in the town and city journals.

Barger's concluding statement that the real income of persons in trade between 1879 and 1929 appears not to have kept pace with that of the rest of the working force, reminds me of the present. To be sure,

² I have not used these sources for income data, but I remember seeing annual—frequently monthly—data on the volume and value of commodity exports and imports in the various cities.

some authorities have found evidence that income from retail distribution has been more stable than income in other fields during periods of depression. David A. Wells made such a finding for the long depression following 1873.³ It is possible that superior security has enabled retail employers to attract and retain a sufficient supply of labor even at a lower wage level.

TECHNIQUE AND TERMINOLOGY OF POSTCASTING

As one who has occasionally dabbled in historical statistics, I would like to be reassured that the qualifications and adjustments made by Barger and Marburg are not cut more finely than the degree of accuracy of their raw data. Perhaps we can phrase each estimate as a quasi-exact quantity, with its estimated probable error expressed as a range. The range between two extreme probable values assigned to an unknown might be expressed in the plus-or-minus system. To prevent confusion between actual counts or measurements (grossly imperfect though some of them may be) and statistics representing one judgment as to what an imaginary survey would have yielded, estimates should be clearly identified as estimates and if possible keyed to those responsible for them. Otherwise, synthetic figures may in time become imbedded into our fabric of knowledge without distinction from actual measurements. Furthermore, the people who make these estimates deserve credit and responsibility for them. A solution might be to use italics, or parentheses, or a capital E to denote estimates, and to include the names of the responsible persons or organizations before or after estimated figures. Some such plan would also help us understand and cope with discrepancies among estimates purporting to represent the same variable.

To illustrate, several independent investigators have made estimates of the national income of the United States for various dates in the nineteenth century. Kuznets (in material made available to us by the National Bureau) made a "striking" criticism of estimates published by R. F. Martin. To formulate what I think are needed—criteria for accepting or judging postcasts—the procedures we use for handling forecasts may be useful.

I have made a simple check of the rates of annual growth postulated for retail sales in 1816 (Fred M. Jones), 1839-40 (Marburg), and 1869 (Barger). The average annual rates (compounded) were estimated to be 8.1 per cent for 1816-39, 7.4 per cent for 1839-69, and 7.7 per cent for the longer period 1816-69. The rates are approximately twice as high as the rate for production and trade postulated by Silberling for the nineteenth century (3.5 to 3.8 per cent) and about 60 per cent above the

³ *Recent Economic Changes*, Appleton, 1889, p. 3. (A collection of papers, the first of which was apparently published in *Popular Science Monthly*, 1886.)

production rate derived by Frickey for 1860–1914.⁴ Trescott's estimates on national income (in this volume) represent a long-term trend extrapolated at an annual rate of 3.7 per cent, again only about half the Jones–Marburg–Barger trend rate. But experiments with an index of receipts of Ohio Valley products at the port of New Orleans in the antebellum period show annual rates of growth (compounded) around 8 per cent (10.8 per cent for 1816–39; 7.7 per cent for 1810–60) calculated in rough fashion from the terminal years only.⁵ An annual growth rate of 8 per cent seems plausible, therefore, for some individual sectors of the U.S. economy of the nineteenth century.

COLLECTIVE VERSUS INDIVIDUAL JUDGMENT

In a possible new literature of synthetic statistics, with or without means of identification as suggested above, we may also see a development towards collective rather than individual judgment. Collective judgment is common in other fields where the exact truth is hard, or impossible, to come by—jury trials, fire insurance rate-setting, job evaluations, economic forecasting. Such a procedure was employed during World War II to try to determine the accuracy of the BLS index of the cost of living. Unfortunately, no proof exists that collective or composite judgment in a particular case is intrinsically superior to individual judgment. In the meantime, I hope for ways and means of keying all our estimates to avoid the danger of confusing them with actual counts.

⁴ Norman Silberling, *The Dynamics of Business*, McGraw-Hill, 1943, p. 43. For citation of Frickey's data, see *Technical Bulletin*, American Institute of Economic Research, March 22, 1954, p. 4.

⁵ The coincidence at 7.7 per cent annual rate of increase, between the New Orleans figures for 1810–60 and the retail sales figures for 1816 and 1869, disappears when more refined methods of trend computation are applied to the New Orleans data. Using the conventional method of fitting a straight-line trend to logarithms of the data, I get annual (compound) rates of increase as follows: for 1810–60, 9.1 per cent; for 1822–60, 9.5 per cent; and for 1816–39, 10.8 per cent (another coincidence, this time between the rate calculated from the terminal years only and the rate computed from all the annual data available).

The annual index of New Orleans receipts of Ohio Valley products is given for the years 1810–62 in my *Western Prices before 1861*, Harvard University Press, 1943, pp. 580–581. Three characteristics of these data should be noted: they represent in large part contemporary annual estimates rather than a strict count; no data are available for 1813, 1815, and 1819–21; and a definite break in the trend took place in the 1850's.

The United States Government and National Income, 1790-1860

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Federal Income Payments

FROM January 1, 1790, through June 30, 1860, the federal government paid about \$1.6 billion in income payments to domestic business firms and individuals. Of this amount, about \$1.3 billion went for the purchase (net of sales) of current output or the services of real resources, and about \$0.3 billion more for transfer payments and business subsidies. These income payments were divided fairly evenly between business firms and individuals. In addition, about \$140 million of net income payments went to foreigners or to state governments. Table 1 summarizes the aggregate data for the period as a whole.

Of the \$620 million paid to federal employees as compensation, 43 per cent went to military personnel. The remainder was divided among three groups of employees: (1) Congress and the civil servants in the capital city; (2) an increasingly extensive field organization, composed of employees of customs, post offices, land offices, courts, and so forth; and (3) a large body of common labor, skilled and unskilled, employed at military posts, armories, navy yards, construction projects, and so forth. The division of payments was as follows: army, \$150 million; navy, \$118 million; civil list (chiefly in capital), \$72 million; postal service (outside capital), \$67 million; customs, \$85 million; labor, \$82 million; and "other" (chiefly outside capital), \$47 million.

The growth trend of federal purchases of goods and services between 1790 and 1860 is shown in Table 2, which gives annual averages by decades for the major components.

These figures indicate a steady growth trend in all categories over the seventy years as a whole, punctuated with substantial short-run variations in particular periods reflecting wars and depressions. Between the relatively peaceful decade ending in 1810 and that ending in 1860, most of these expenditure categories increased about tenfold, representing a growth rate of about 4 per cent per year. Considering the downward

NOTE: The writer wishes to acknowledge the helpful comments of C. Harry Kahn of the staff of the National Bureau of Economic Research on the original version of this paper.

INCOME ORIGINATING, BY SECTOR

TABLE 1
Federal Government Income Payments, 1790-1860
(millions of dollars)

<i>Total Income Payments</i>		
NET PURCHASES OF GOODS AND SERVICES		
Compensation of employees:		
Military	267	
Civilian	353	
	—	
Total compensation		620
Construction, net of direct federal wage payments:		
Ships	27	
Other	117	
	—	
Total construction		144
Other purchases		732
Less: Sales of goods and services		-187
		—
Total net purchases		1,310
NET TRANSFER PAYMENTS AND SUBSIDIES		
Interest on the public debt:		
To individuals	75	
To business	50	
Less: Interest and dividends from business	-13	
	—	
Total net interest payments		112
Pensions		84
Payments to Indians		29
Fishing bounties and allowances		10
Claims against foreign countries assumed by the United States		25
Other		12
		—
Total net transfer payments and subsidies		271
PAYMENTS TO FOREIGNERS		
Interest paid		71
Other income payments, chiefly naval and diplomatic		34
Less: Income received		-5
		—
Total net payments		100
PAYMENTS TO STATE GOVERNMENTS		
Interest paid		8
Other income payments		43
Less: Interest received		-6
Less: Other income received		-3
		—
Total net payments		42
TOTAL INCOME PAYMENTS		1,723

continued on next page

U.S. GOVERNMENT AND NATIONAL INCOME, 1790-1860

TABLE 1 concluded

<i>Total Income Payments</i>	
INCOME PAYMENTS TO DOMESTIC BUSINESS AND INDIVIDUALS	
To business:	
Net purchases of goods and services	689
Net interest	37
Claims against foreign countries assumed by the United States	25
Fishing bounties and allowances	10
Total net payments	761
To individuals:	
Compensation of employees	620
Interest	75
Pensions	84
Payments to Indians	29
Total payments	808
Unclassified	12
<i>Total Income Payment to Business and Individuals</i>	1,581

The sources and methods of derivation of the estimates in this and the following tables are given in the Appendix.

Components in this and the following tables may not add to totals because of minor rounding errors and statistical discrepancies.

TABLE 2
Federal Purchases of Goods and Services, Annual Averages by Decades,
1790-1860
(millions of dollars)

	FINAL YEAR OF DECADE						
	1800 ^a	1810	1820	1830	1840	1850 ^b	1860
Compensation	1.6	2.6	8.1	5.7	9.4	13.5	21.6
Construction	0.5	0.5	1.4	1.5	2.6	1.8	6.2
Other	1.4	2.3	9.7	4.6	11.5	17.1	27.3
Gross purchases	3.6	5.4	19.2	11.8	23.5	32.4	55.2
Less: Sales	-0.2	-0.5	-1.1	-1.5	-3.6	-4.7	-7.5
Net purchases	3.4	4.9	18.1	10.3	20.0	27.8	47.7

^a Eleven years, here and in Tables 3 and 4.

^b Nine and a half years, here and in Tables 3 and 4.

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trend of prices, the increase was probably somewhat greater in real terms.

The growth pattern for transfer payments and subsidies was considerably different, as shown in Table 3. Among the transfer payments, only

TABLE 3
Federal Transfer Payments and Subsidies, Annual Averages by Decades,
1790-1860
(millions of dollars)

	FINAL YEAR OF DECADE						
	1800	1810	1820	1830	1840	1850	1860
Interest:							
To individuals	0.8	0.9	2.5	1.9	0.2	0.5	0.7
To business	0.4	0.5	1.3	1.1	0.1	0.7	0.8
Less: From business	-0.1	^a	-0.2	-0.4	-0.5	^a	^a
Pensions	0.1	0.1	0.6	1.5	2.8	1.7	1.6
Indian payments	^a	^a	^a	0.2	0.6	0.7	1.4
Fishing bounties	0.1	0.1	0.1	0.2	0.3	0.2	
Other	^a	0.4	0.2	0.8	0.9	0.6	0.8
Net paid	1.3	2.0	4.3	5.4	4.4	4.5	5.2

^a Less than \$50,000.

one series, payments to Indians, shows a normal growth pattern. The fishing bounties, paid as compensation for the import duty on salt, remained relatively stable while they were in effect but terminated in 1849. The irregular courses of the other items resulted in relatively stable total payments over most of the period. Military pensions were paid on a limited scale until 1816, when the program was greatly expanded. Thereafter the natural tendency for pension rolls to decline was periodically offset by further liberalization of benefits.

Interest paid to domestic business firms and individuals depended on several variables—the proportion of the debt held by them, the size of the debt, and the level of interest rates. During the first decade, much of the large debt bore low interest rates or none. After 1801 interest rates increased, but the size of the debt decreased. Foreign holdings, large before 1810, declined during the war of 1812, while the debt increased and interest rates rose, all tending to increase domestic payments. During the 1820's, all these influences were reversed, and in the 1830's, the debt was virtually extinguished. Subsequent depressions and war increased it again, but never (until after 1860) to its former absolute level.¹

¹ A conceptual problem arises in treating cases where the government redeemed its securities at values other than the issue price. If the issue was at par originally, the gains or

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The funds received by the federal government from interest and dividends came chiefly from the First and Second Banks of the United States. Since those institutions were at the same time receiving interest on their holdings of federal securities (given to them in part to pay for the government's stock), it seems appropriate to offset these receipts against interest expenditures.

Table 4 shows the growth pattern of income payments to state governments and to foreigners. The pattern of public debt policy is

TABLE 4
Federal Income Payments to Foreigners and State Governments, Annual
Averages by Decades, 1790-1860
(millions of dollars)

	FINAL YEAR OF DECADE						
	1800	1810	1820	1830	1840	1850	1860
Payments to foreigners:							
Interest paid	1.3	2.1	1.0	1.0	0.2	0.5	1.1
Total net payments ^a	1.3	2.2	1.2	1.2	0.4	0.9	1.6
Payments to states:							
Interest paid	0.2	0.2	0.1	^b	^b		0.2
Less: Interest received				^b	-0.1	-0.2	-0.2
Total net payments ^a	0.2	0.3	0.2	0.1	3.0	0.1	0.3

^a Not all components are shown.

^b Less than \$50,000.

also evident here. Foreigners and state governments received substantial interest payments before 1830, much less thereafter. After the mid-thirties, the federal government was a net recipient of interest from states on its trust fund security holdings. Other payments to states were irregular, dominated by the \$28 million surplus revenue distributed in 1837.² Noninterest payments to foreigners—chiefly navy and diplomatic expenditures—showed a normal growth, accentuated by Mexican War receipts and expenditures.

losses resulting from redemption probably were windfalls. But if the government redeemed at par securities originally issued above or below par, the capital gain or loss could have been anticipated, and therefore should have formed part of the interest calculation of the purchaser (complicated by uncertainty as to redemption dates, however). Gains and losses from such transactions might legitimately be counted as income transactions. The most important cases of this sort involved securities issued during the war of 1812 at discounts totaling about \$6 million. These were redeemed at par in the late 1820's. I have not included these as income payments, partly because of the problem of dating.

² I have discussed these transactions in detail in "Federal-State Financial Relations, 1790-1860," *Journal of Economic History*, September 1955.

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Federal Expenditures and National Income

Table 5 gives a comparative view of the levels and growth of federal expenditures and of national income during this period. National income estimates are presented as ranges rather than as single figures

TABLE 5
Federal Income Payments and National Income, Annual Averages for Decades
Centered on Census Years, 1790-1860
(dollar figures in millions)

	CENSUS YEAR							
	1790	1800	1810	1820	1830	1840	1850	1860
National income in current prices (\$) ^a	340-500	460-700	690-900	790-960	930-1,165	1,600-2,000	2,160-2,640	3,600-4,400
Average net income payments:								
Amount (\$) ^b	4.1	7.6	17.3	20.6	17.9	31.3	43.2	64.0
As percentage of national income	0.8-1.2	1.1-1.7	1.9-2.5	2.1-2.6	1.5-1.9	1.6-2.0	1.6-2.0	1.5-1.8
Average net purchases:								
Amount (\$) ^b	2.1	4.5	13.4	12.1	13.0	23.0	36.1	57.8
As percentage of national income	0.4-0.6	0.6-1.0	1.5-1.9	1.3-1.5	1.1-1.4	1.2-1.4	1.4-1.7	1.3-1.6
Other net income payments:								
Amount (\$) ^b	2.0	3.1	3.9	8.5	4.9	8.3	7.1	6.2
As percentage of national income	0.4-0.6	0.5-0.7	0.4-0.6	0.8-1.1	0.4-0.5	0.4-0.6	0.2-0.3	0.1-0.2

^a See the discussion in the text.

^b Annual averages for a decade centered on the census year. For example, the figure for 1800 is the average for 1796-1805. The figure for 1790 is the average for 1790-95; and that for 1860, the average for 1856-60.

because of their uncertain foundation, and their analysis cannot be more refined than the data warrant. The most sweeping conclusion which can be drawn with apparent safety is that federal income payments maintained a relatively stable relationship to national income, ranging generally between 1 and 2 per cent. Also the conclusion is probably warranted that total income payments reached their peak relative to national income in the periods reflecting the War of 1812, and subsequently declined, although not to the average level of pre-1812. The income ratios for 1830-60 show a remarkable degree of stability at between 1.5 and 2.0 per cent. There was a shift in the component series,

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however, with purchases rising relative to transfer and other income payments. The ratio of purchases to national income is consistently higher after 1810 than before and appears to follow a "normal" level of about 1.0 to 1.5 per cent, with higher points reflecting the war periods of 1812-15 and 1846-48. Finally, there is certainly no ambiguity

TABLE 6
Federal Expenditures by Major Function, 1790-1860
(millions of dollars)

	GOODS AND SERVICES		OTHER		NET EXPENDITURES
	<i>Purchases</i>	<i>Less: Sales^a</i>	<i>Expenditures</i>	<i>Less: Receipts</i>	
Defense	848	-6	22	-4	860
General government ^b	273	-1			272
Postal service	226	-170	4	-1	58
Indian affairs	51	-1	29		79
Pensions	3		84		87
Interest			202	-17	185
Aid to foreign commerce ^c	46				46
Aid to domestic transport	23	-1	10		32
Foreign indemnities ^d			66	-11	55
Miscellaneous ^e	29	-3	83		108
Total	1,499	-182	501	-33	1,785

^a Sales of goods and services not allocable to specific functions are not included.

^b Includes expenses of Congress, the courts, and executive departments not included under other functions (President, Treasury, State), diplomatic expenses, cost of collecting taxes, public buildings not otherwise classified, and District of Columbia expenditures for federal purposes.

^c Includes lighthouses, marine hospitals, relief of seamen, and coast geodetic survey.

^d Includes payments to France and Mexico for territories and payments to U.S. citizens for claims against foreign countries.

^e Includes costs of surveying and selling lands, nonfederal District of Columbia expenditures, the Mint, the Patent Office, surplus paid to states, and other expenditures.

about the relative decline of transfer and other income payments after 1820.

The importance of government relative to national income stems not merely from its role as payer of incomes but also from its role as a user of resources. The contribution, if any, to the nation's economic welfare made by the government's use of resources may be a direct enhancement of the utility and enjoyment derived from those resources, or it may be indirect through an improvement in the productivity of the private economy. To examine the question of these contributions, Table 6 presents data on federal expenditures by major function.

Programs under each of the functional headings were begun within the first twenty years of the government's existence, and there was no

dramatic expansion in the scope of federal activities before 1860. However, the relative proportions of different items did change considerably, with the period 1812-15 serving as chief dividing point. Between 1790 and 1812, the total federal expenditure for pensions, Indian affairs, net postal expenses, foreign commerce, and domestic transportation amounted to only 3 per cent of federal spending; from 1813 through 1860, expenditures for these purposes made up about 19 per cent of all federal expenditures. This proportional expansion occurred mainly at the expense of interest, which declined relatively and absolutely. The growth of federal expenditures was chiefly for expansion in the scale of existing activities, rather than for increasing the scope of federal actions. This pattern continued throughout the nineteenth century without the addition of any important expenditure categories.³

Table 6 indicates that nearly 90 per cent of the gross value of resources purchased by the government went into three activities—defense, general government, and the postal service. The willingness of the public to pay directly for most of the postal service testifies to its productivity. But otherwise the figures give the impression of a “night-watchman state,” with a minimum of its activities having direct and obvious economic significance.

It can be argued, however, that federal activities in general had more direct economic motivation and significance and were in particular more directly oriented toward economic development and growth than these functional classifications indicate. The bulk of expenditures for postal deficits, Indian affairs, improvement of internal transportation, public-land management, foreign indemnities, and some interest payments were directly related to the acquisition and settlement of the vast western territories. At the same time, the government promoted international and interregional ocean trade by building and maintaining lighthouses, surveying the coast, and improving seaports.

Vastly more important, the categories of defense and general government included programs of great economic significance. The costs of collecting customs duties were incurred in part to regulate commerce and to protect domestic producers, wisely or unwisely. The maintenance of a diplomatic and consular staff abroad was in large measure to aid and protect merchants and seamen. U.S. defense expenditures had also a strongly economic implication. A large share of army expenditure was devoted to extending and protecting the frontier, thus contributing to geographic expansion and settlement. And the navy was consistently regarded as the protector of U.S. commerce, with its most notable

³ For discussion of this and some attempts to explain it in the context of the growth of federal spending to the present, see Trescott, “Some Historical Aspects of Federal Fiscal Policy, 1790-1956,” in *Government Expenditure Policy for Economic Growth and Stability*, Joint Economic Committee, U.S. Congress, 1957.

achievement the suppression of the Barbary pirates. The productive contribution of such activities cannot be measured, or the magnitude of expenditures for these roles be counted. The point is merely that not all federal expenditures, even for defense and general government, were as far removed from economic significance and motivation as the remuneration of members of Congress, or as unproductive as a standing army guarding against nonexistent international menaces.⁴

Then, as now, the volume of expenditures for various objectives was not an accurate reflection of the economic impact of government activity as a whole or of the extent of its contribution to specific objectives. Before 1860, the government had another resource at its disposal besides money—the public lands. Distribution of lands to veterans, to railroads, and to state governments to promote other activities (chiefly transport improvements, before 1860) probably dwarfed federal monetary outlays for these purposes.

Sources and Uses of Federal Funds

So far this discussion has not dealt systematically with the aggregate pattern of federal finance. Table 7 shows the relationship of federal income payments and other receipts to expenditures for the period as a whole and for its major time segments.

Among the several significant elements of federal finance illustrated by the table is the heavy reliance on customs revenue, which constituted nearly seven-eighths of total revenue. Internal taxes were levied in only sixteen years, the last being 1817.⁵ The government also received substantial sums from sale of lands, although this was largely offset by the expenses of acquiring, surveying, and selling them.

Over the period as a whole, the government spent a net sum of \$30 million for redemption of its own debt or for purchase of other securities (chiefly about \$7 million of canal stocks and state government securities). However, the degree of net borrowing or repayment varied greatly from one time segment to another. Federal finance probably exerted some

⁴ The best description of the structure and functions of the federal government in this period is given by Leonard D. White in his studies in administrative history (see *The Federalists, The Jeffersonians, and The Jacksonians*, Macmillan, 1948, 1951, and 1954). The following are valuable treatments of specific federal activities of economic interest: George D. Harmon, *Sixty Years of Indian Affairs*, University of North Carolina Press, 1941; W. H. Glasson, *Federal Military Pensions in the United States*, Oxford University Press, 1918; Harold and Margaret Sprout, *The Rise of American Naval Power*, Princeton University Press, 1939; Edgar B. Wesley, *Guarding the Frontier*, University of Minnesota Press, 1935; James R. Jacobs, *The Beginning of the U.S. Army*, Princeton University Press, 1947; A. Hunter Dupree, *Science in the Federal Government*, Harvard University Press, 1957; Louis C. Hunter, *Steamboats on the Western Rivers*, Harvard University Press, 1949.

⁵ About three-fifths of the internal revenue came from excises (chiefly liquor) and related taxes, the rest from taxes on real and personal property.

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TABLE 7
Sources and Uses of Federal Funds, Selected Periods, 1790-1860
(millions of dollars)

	1790-1811	1812-1815	1816-1838	1839-1860	Total
SOURCES: NET RECEIPTS^a					
Customs	204	38	514	824	1,581
Internal taxes	10	9	16		35
Land sales	6	4	96	72	178
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total	220	51	626	897	1,795
USES: NET PAYMENTS					
Purchases of goods and services	92	100	333	787	1,312
Transfer payments and subsidies	36	12	118	106	271
Payments to foreigners ^b	53	5	23	51	131
Payments to state governments ^c	5	-2	36	4	43
Public debt and other securities ^d	27	-71	114	-40	30
Cash balance increase minus new money created	8	7	4	-11	9
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total	220	51	626	897	1,795

A minus sign for a use indicates an excess of receipts.

^a A small amount of miscellaneous receipts are omitted.

^b Includes redemption of public debt directly placed abroad by the government, not redemption of debt purchased by foreigners privately.

^c Excludes transactions in principal of federal or state debts, but includes interest on these.

^d Debt retirement and purchase of nonfederal securities.

influence in the direction of "forced saving" for the economy, diverting some funds out of consumption spending into the capital market through its tax and debt policies. Most federal borrowing (especially between 1812 and 1815) came from bank loans or Treasury note issues under circumstances which did not divert funds out of private capital expenditures. Debt repayment, on the other hand, generally occurred during prosperity when the funds flowed into an active capital market. And the tax burden undoubtedly rested to a considerable degree on consumption. However, against this tendency toward forced saving one should offset any funds withdrawn from capital expenditures by revenues from the sale of federal lands.

The Cyclical Pattern of Federal Finance

Federal revenues and expenditures were significantly influenced by the fluctuations of incomes and prices in the economy as a whole. Revenues from customs and land sales were particularly sensitive to economic conditions. The rise of revenues in boom periods usually led

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to debt retirement, but led also to expansion of federal spending programs, particularly for construction of public buildings and transportation facilities. In periods of panic and depression federal revenues fell off sharply, and expenditures were usually reduced less rapidly causing the government to engage in deficit spending in each of the three chief depressions of the half century. Table 8 summarizes the behavior of

TABLE 8

Behavior of Certain Federal Transactions and Federal Surpluses and Deficits during Cycle Peaks and Recessions, 1815-1821, 1834-1842, and 1854-1860

	YEAR OF CYCLE						
	1	2	3	Peak 4	5	6	7
Transactions	(averages of cycle relatives for all three cycles ^a)						
Receipts from customs and land sales	85	141	133	100	83	75	79
Net payments for:							
Purchase of goods and services	100	100	103	105	102	98	91
New ship construction	56	61	90	83	99	154	157
New nonship construction	80	95	110	137	129	98	61
Transfer payments and subsidies	96	100	99	117	103	95	95
Public debt (index of absolute average) ^b	111	103	90	83	92	105	116
	(per cent of average annual receipts and payments during the included cycle)						
Surpluses and Deficits (-)							
1815-21	63	67	40	6	12	-5	-10
1834-42: ^c							
1834-37	12	65	83	-132			
1838-42			5	12	-19	-30	-23
1854-60	32	12	16	3	-42	-27	-15

^a Since 1838 and 1839 were both peak years, I averaged 1836 with 1838 and 1837 with 1839 to get years 3 and 4 in that cycle. Cycle relatives were computed by expressing the value of each series as a percentage of its average value in the individual cycle, then averaging each set of three relatives.

^b The very small size of the federal debt in 1834-42 renders use of individual relatives unsatisfactory.

^c Since both 1837 and 1839 were both peak years, the series for 1834-42 overlaps in years 3 and 4.

certain federal financial transactions around the three major upper turning points of the period—1818, 1837, and 1857.

Factors unrelated to the business cycle influenced significantly the behavior of some of the federal transactions. Purchases and customs revenues declined substantially from 1815, reflecting the end of the war.

The high figure for transfer payments at the peak reflects the disbursement to U.S. claimants in 1837 of the indemnity received from the French government. Otherwise, the correlation of transfer payments with the cycle is almost random.

The series on nonship construction and the public debt show the most perfect conformity to the cycle—a conformity which is also high in each of the three cycles separately. The remarkable pattern of ship construction, which shows a large increase well after the peak in each of the three cycles, turns out not to be an example of deliberate countercyclical finance. Instead it reflects a time lag between boom year expenditure authorizations and actual spending.⁶

Although federal fiscal policy during depressions reflected a disapproval of deficits and debt, taxes were not usually raised to avoid deficits. The tariff increase of 1842 is an exception, but that merely offset the periodic reductions which had been made during the depression under the Compromise Act of 1833. Efforts to avoid deficits went chiefly into expenditure reduction. However, during the panic of 1857, President Buchanan and Secretary of the Treasury Howell Cobb showed considerable understanding of the stimulating effects of expenditures, and consequently cuts were smaller than in previous depressions.⁷

The usual shift from surplus to deficit as boom gave way to recession suggests a stabilizing effect of fiscal policy, offset at least in part by the depressing effects of expenditure reduction. In any event, since total federal revenues and expenditures were less than 2 per cent of national income, the effects of federal policy on incomes could not have been of much consequence. There is a greater chance that the monetary effects of federal deficits, particularly the release of gold in 1857–58, may have benefited the economy.

APPENDIX

Sources and Methods

Summary statistics on major elements of federal finance for the period studied, while readily available, are neither in a suitable form for economic analysis nor altogether accurate for what they purport to show. Conventional figures show the transactions of the Treasury, which consisted chiefly of receipts from or payments to government collecting and disbursing agencies. Material on these agencies plus such independent agencies as the Post Office must be assembled to obtain a complete picture of federal transactions with the public.

⁶ Harold and Margaret Sprout, pp. 96–98, 113ff., and 146–149.

⁷ See Cobb's (35th Cong., 1st sess., H. Doc. 3, p. 11) and Buchanan's remarks (35th Cong., 1st sess., S. Doc. 11, p. 7).

STATISTICS ON FINANCE

The statistics on federal finance presented in this paper were built up by computing separate accounts of receipts, expenditures, and balances for some twenty separate components of the government. The heart of this was the Treasury data which were in turn integrated with those for the other agencies. Intragovernment payments were netted out, leaving a consolidated cash account of the various types of receipts and payments between government and public.

The essential source of information about Treasury transactions is the annual *Account of the Receipts and Expenditures of the United States*, published by the Register of the Treasury. Each is a volume of several hundred pages covering the transactions for one (fiscal) year. Payments from the Treasury under each appropriation heading are shown, usually with the names of persons receiving the payments and the amounts to each.⁸ The volumes for 1845-48 and from 1853 on are published in the executive documents of the House of Representatives. Earlier volumes are relatively rare; complete sets exist in the Fiscal Section of the National Archives and in the General Accounting Office depot at Cameron, Virginia. Summary data from *Receipts and Expenditures* are available in fairly good detail in the annual Treasury finance reports for the years 1822-34. For other years, the finance reports do not give much detail.

Certain summary volumes give much of the same information as *Receipts and Expenditures* in more convenient and widely accessible form. These are:

1. *Annual Expenditures from 1816 to 1834*, 24th Cong., 1st. sess., H. Doc. 39 (1836)
2. *Statement of the Appropriations and Expenditures . . . of the Department of State from March 4, 1789, to June 30, 1876*, 44th Cong., 2d sess., S. Doc. 38 (1877)
3. . . . *Appropriations and Expenditures for Public Buildings, Rivers and Harbors, Forts, Arsenal, Armories, and Other Public Works, from . . . 1789 to . . . 1882*, 47th Cong., 1st sess., S. Doc. 196 (1882)
4. . . . *Appropriations and Expenditures of The Navy Department from . . . 1789 to . . . 1876*, 45th Cong., 1st sess., S. Doc. 3 (1877)
5. . . . *Appropriations and Expenditures for Army and Navy Pensions from . . . 1789 to . . . 1876*, 45th Cong., 1st sess., S. Doc. 4 (1877)
6. . . . *Appropriations and Expenditures . . . in the District of Columbia, from . . . 1790 to . . . 1876*, 45th Cong., 2nd sess., S. Doc. 84 (1878)

The last three titles are bound together.

⁸ Incidentally, the data in *Receipts and Expenditures* reflect warrants actually paid by the Treasurer (see the explanation by Secretary of the Treasury Bristow, 44th Cong., 1st sess., S. Rept. 371, pp. 36-37). Since the totals from this source are used for the summary data appearing in the Treasury's annual finance reports, the latter source clearly errs in describing these as reflecting warrants issued, at least for the years through 1890.

For information on the other agencies, and for supplementary information needed to classify Treasury transactions, a wide range of materials were used. Data from collectors of customs, on internal taxes, and on public land receipts appear in separate sections of *Receipts and Expenditures*. Most other agencies published annual reports containing financial data (to be found in the executive documents of the House and Senate), those for the Army and Post Office being especially good. For early years, such material sometimes appears in the various volumes of *American State Papers*, particularly those on finance. The following materials were particularly useful for specific agencies or types of transaction:

- Government land purchases.* 35th Cong., 1st sess., H. Doc. 3, pp. 133-136, and 19th Cong., 1st sess., H. Docs. 92 and 97.
- Indian trust funds.* 25th Cong., 2d sess., S. Doc. 426, and manuscript stock journals and ledgers, Indian Affairs Section, National Archives.
- Privateer Pension Fund.* 26th Cong., 2d sess., H. Doc. 91.
- Smithsonian Institution.* 33rd Cong., 2d sess., S. Misc. Doc. 24, pp. 60-67, and manuscript stock journal in Fiscal Section, National Archives.
- Navy Hospital Fund.* 19th Cong., 2d sess., H. Doc. 54, 22d Cong., 1st sess., H. Doc. 5, p. 6.
- District of Columbia Commissioners.* Wilhelmus B. Bryan, *A History of the National Capital*, 2 vols., Macmillan, 1914 and 1916, manuscript account book in Fiscal Section, National Archives; 23rd Cong., 2d sess., H. Doc. 35; 26th Cong., 2d sess., S. Doc. 5; and 18th Cong., 2d sess., H. Rept. 90.
- Louisville and Portland Canal Company.* 40th Cong., 2d sess., H. Misc. Doc. 83, and printed broadside annual reports in Fiscal Section, National Archives.
- Diplomatic and foreign transactions.* John Bassett Moore, *History and Digest of International Arbitrations to which the United States has been a Party*, 6 vols., Carnegie Institution, 1898.
- Public debt.* Rafael A. Bayley, *The National Loans of the United States*, 1882.
- Miscellaneous.* Adam Seybert, *Statistical Annuals*, Thomas Dobson and Sons, 1818; U.S. Treasurer's *Accounts* (published annually—not to be confused with *Receipts and Expenditures*).

In constructing the estimates, two prevalent statistical difficulties were encountered. It was difficult to determine the economic character of some expenditures—particularly those for fulfilling Indian treaties and for various “relief” items which represented payments under special legislation (private bills, ordinarily). Indian payments were divided between transfers and purchases in the same ratio as that indicated by the sources for six individual years. All relief items were

classed as transfer payments. The second difficulty lay in ascertaining the cash balances held by some agencies, particularly the Navy Department. The assumption was usually followed that balances on hand were a relatively stable proportion of funds advanced from the Treasury. The proportion shown for a few sample years were then extrapolated. Fortunately, most of the agencies published cash balance data for many if not all years.

The data on expenditures by function, summarized in Table 5, were computed for each year from the same source materials. To determine income payments, the series on compensation and construction were subsequently compiled from the same sources. For 1839-60, the source materials are good, and most of the items included in compensation were taken from explicit statements rather than estimates. The main exception was compensation of workers on federal nonship construction; it was estimated that 10 per cent of gross expenditures (including repairs) were for direct wage payments. Many projects were carried out entirely by contract and thus did not involve direct federal wage payments. In others, materials costs usually were about equal to labor costs. The 10 per cent estimate is, therefore, probably subject to considerable margin of error.

For the years before 1839, the figures on compensation rely increasingly on estimation. Major items are fairly reliable. Funds advanced for military pay are stated explicitly, although it is necessary to estimate how much was spent and how much retained in balances. Compensation of customs officials, postmasters, and government employees covered by the Civil List were all relatively stable fractions of total expenditures in those categories, and were estimated on that basis. Other items, particularly those relating to common labor at military installations, contain considerable guesswork. For this reason, annual data for 1790-1810 are not reproduced here.

The series on construction was based chiefly on the summary volume of *Appropriations and Expenditures for Public Buildings*, (3) above, supplemented by data on navy facilities and District of Columbia expenditures from (4) and (6) above. The raw figures were adjusted to allow for an estimated cash balance retained. Repairs and estimated replacements were deducted, after the wage estimation noted above. Navy ship construction was added in, net of wages for which some explicit data were found.

In calculating transfer payments, interest payments were divided among business firms, individuals, foreigners, and state governments on the basis of data showing the distribution of ownership of the federal debt, some of which are reproduced in Table 9. The division between domestic business firms (actually, corporations) and individuals is crude and is not reproduced for individual years. Annual data on federal

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income payments are given in Table 10; on sources and uses of federal funds, 1790–1860, in Table 11; on transfer payments in Table 12; and on purchases of goods and services, 1811–1860, in Table 13.

TABLE 9
Distribution of Ownership of the Federal Debt, Selected Years, 1794–1856
(millions of dollars)

Year	Foreign ^b	Domestic Indi- viduals	Domestic Corpo- rations	Bank of the United States ^c	State Govern- ments ^d	Federal Agencies ^e	Un- classi- fied	Total ^f
1794	32 ^g			10	8		32	82
1803 ^a	43 ^h	22 ^h	11 ^h	4	6	0.1		81
1807 ^a	35 ⁱ	17 ⁱ	9 ⁱ	2	5	0.2		66
1813 ^a	20 ^j	35 ^j	15 ^j		3	0.2	4	73
1817 ^a	25	47	24	10 ^k	2	0.9	5	104
1820 ^a	25 ^l	47	19 ^l	9	1	1.0		92
1824	26 ^m			19	1	1.0	44	91
1830	13			8	1	1.0	17	40
1836	1.5						0.2	1.7
1848	11					0.8	37	49
1852	30				4 ⁿ	0.8	32	67
1856	15				4 ^p	0.7	12	32

Unless otherwise noted, figures are for December 31, 1794–1836, and for June 30, 1848–56. Figures for state governments, 1852–56, cover Texas only. Figures for domestic corporations include Bank of the United States. Where dates differ for components and totals, components may not add up to totals.

^a Comprehensive data for 1803, 1807, 1813, 1817, 1820 from Adam Seybert, *Statistical Annals*, pp. 736, 757; Register of the Treasury, *Estimates and Statements* (MSS, Fiscal Section, National Archives), Vol. XIII, pp. 18, 203–208. Totals are adjusted for bank loans and old foreign debt.

^b James A. Wettereau, "New Light on the First Bank of the United States," *Pennsylvania Magazine of History and Biography*, Vol. LXI, No. 3 (1937), p. 269 (for 1794); Walter B. Smith, *Economic Aspects of the Second Bank of the United States*, Harvard University Press, 1953, p. 68 (for 1824) and p. 90 (interest data used to estimate 1830); *Bankers Magazine* (New York), old series, Vol. IV (1848), p. 418; new series, Vol. IV (1852), p. 127; 34th Cong., 3d sess., H. Doc. 2, p. 426 (1856). Figure for 1836 represents Dutch debt of District of Columbia cities, assumed by United States.

^c Wettereau, pp. 270, 279, interpolated; reports of Second Bank in *American State Papers: Finance*, and executive documents of Congress.

^d Paul B. Trescott, "Federal-State Financial Relations, 1790–1860," *Journal of Economic History*, September 1955, pp. 233–34.

^e Computed from numerous records of federal trust funds, as listed in the text.

^f Total debt computed chiefly from R. A. Bayley, *National Loans of the United States; American State Papers: Finance; and Receipts and Expenditures*, 1882.

^g May, 1795.

^j March, 1817.

^m September, 1827.

^h June, 1803.

^k March, 1818.

ⁿ December, 1852.

ⁱ September, 1807.

^l October, 1820.

^p December, 1856.

U.S. GOVERNMENT AND NATIONAL INCOME, 1790-1860

TABLE 10
Federal Income Payments, Annually, 1790-1860
(millions of dollars)

Year	NET PURCHASES		NET INCOME PAYMENTS		TOTAL
	OF GOODS AND SERVICES	NET TRANSFER PAYMENTS	To States	To Foreigners ^a	
1790	0.6	0.3		b	0.9
1791	0.9	0.5	0.2	0.2	1.8
1792	1.8	2.0	0.1	0.8	4.7
1793	1.9	1.8	0.1	1.1	4.9
1794	3.6	1.8	0.1	1.4	6.9
1795	3.5	1.4	0.2	1.4	6.5
1796	2.8	1.4	0.2	1.6	6.0
1797	2.9	1.6	0.2	1.9	6.6
1798	4.6	1.3	0.2	1.9	8.0
1799	6.5	1.3	0.2	2.0	10.0
1800	8.1	1.2	0.2	2.2	11.7
1801	5.3	1.5	0.3	2.5	9.6
1802	3.6	1.8	0.3	2.6	8.3
1803	3.2	1.7	0.3	2.4	7.6
1804	3.7	1.9	0.3	2.5	8.4
1805	4.1	3.6	0.2	2.4	10.3
1806	4.4	3.3	0.2	2.3	10.2
1807	4.9	2.1	0.2	2.2	9.4
1808	6.7	1.7	0.2	2.0	10.6
1809	7.1	1.5	0.2	1.7	10.5
1810	6.0	1.1	0.2	1.6	8.9
1811	5.6	0.8	0.2	1.5	8.1
1812	16.4	1.5	0.2	1.2	19.3
1813	27.2	2.4	0.2	0.9	30.7
1814	29.6	3.6	-0.9	0.9	33.2
1815	26.5	4.7	-1.0	1.0	31.2
1816	22.6	6.4	1.0	1.4	31.4
1817	13.4	6.6	1.5	1.4	22.9
1818	13.9	5.4	0.7	1.4	21.4
1819	13.3	6.3	0.4	1.4	21.4
1820	12.2	5.6	0.2	1.3	19.3
1821	10.0	5.8	0.3	1.4	17.5
1822	8.6	5.8	0.1	1.3	15.8
1823	8.4	5.7	0.1	1.4	15.6
1824	9.0	10.9	0.1	1.2	21.2
1825	9.6	5.5	0.3	1.2	16.6
1826	11.1	5.0	0.2	1.1	17.4
1827	11.3	4.4	0.2	1.2	17.1
1828	11.6	4.4	0.1	1.1	17.2
1829	11.8	3.3	b	1.0	16.1

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INCOME ORIGINATING, BY SECTOR

TABLE 10 concluded

Year	NET PURCHASES		NET INCOME PAYMENTS		TOTAL
	OF GOODS AND SERVICES	NET TRANSFER PAYMENTS	To States	To Foreigners ^a	
1830	11.6	3.1	0.1	0.9	15.7
1831	12.5	2.5	0.5	0.8	16.3
1832	14.2	2.7	0.7	0.6	18.2
1833	16.0	5.2	0.1	0.4	21.7
1834	14.8	5.0	0.1	0.4	20.3
1835	14.6	3.4	b	0.2	18.2
1836	24.1	2.9	1.0	0.4	28.4
1837	27.9	7.7	28.5	0.4	64.5
1838	29.7	3.7	0.1	0.3	33.8
1839	24.1	5.4	-0.2	0.3	29.6
1840	21.8	5.1	0.1	0.5	27.5
1841	22.4	3.9	-0.1	0.5	26.7
1842	22.2	3.7	0.5	0.5	26.9
1843 ^c	9.6	2.4	0.5	0.3	12.8
1844	18.1	4.7	0.2	0.7	23.7
1845	18.5	4.1	-0.2	0.8	23.2
1846	22.5	3.7	b	1.1	27.3
1847	41.8	3.7	b	1.9	47.4
1848	47.2	4.4	-0.1	0.2	51.7
1849	35.6	7.1	b	1.5	44.2
1850	25.8	5.7	b	1.5	33.0
1851	31.3	7.2	0.2	1.9	40.6
1852	32.7	7.1	0.4	1.9	42.1
1853	37.2	7.3	0.1	1.8	46.4
1854	38.8	4.0	0.1	1.6	44.5
1855	47.7	4.9	0.2	1.7	54.5
1856	52.3	4.7	0.4	1.0	58.4
1857	56.3	4.6	0.8	1.1	62.8
1858	64.5	3.6	0.5	1.3	69.9
1859	60.3	4.2	0.3	1.5	66.3
1860	55.8	4.3	0.4	2.2	62.7

Figures are for calendar years through 1842, thereafter for fiscal years ending June 30.

^a Does not include lump-sum indemnity receipts or payments, such as the French indemnity received or the payments to Mexico for territory.

^b Less than \$50,000.

^c Six months.

U.S. GOVERNMENT AND NATIONAL INCOME, 1790-1860

TABLE 11
Sources and Uses of Federal Funds, Annually, 1790-1860
(millions of dollars)

Year	SOURCES: NET RECEIPTS ^a			USES: NET PAYMENTS			
	Customs	Internal Taxes ^b	Land Sales	Total Net Income ^c	Foreign Non-income ^d	Public Debt and Other Securities ^e	Cash Balance Change and New Money
1790	1.8		^a	0.9	^f	0.2	0.6
1791	2.9	^f		1.8	-0.3	0.5	1.0
1792	3.8	0.4	^f	4.7	-0.8	-0.2	0.5
1793	4.7	0.4	^f	4.9	-0.4	0.6	0.1
1794	5.2	0.3	0.1	6.9	0.1	-2.0	0.6
1795	6.3	0.5	0.1	6.5	^f	0.3	-0.1
1796	6.3	0.6	0.1	6.0	0.7	0.4	-0.2
1797	8.4	0.7	0.1	6.6	0.7	1.4	0.5
1798	7.7	0.8	^f	8.0	0.3	0.3	-0.1
1799	7.2	0.9		10.0	0.4	-4.3	1.7
1800	9.6	1.8	^f	11.7	0.2	-1.0	0.6
1801	11.3	1.7	0.2	9.6	1.3	1.4	0.9
1802	13.0	0.7	0.3	8.3	1.4	2.7	1.4
1803	11.1	0.3	0.3	7.6	2.4	1.7	^a
1804	11.9	0.1	0.5	8.4	3.0	1.6	-0.6
1805	13.8	^f	0.6	10.3	2.0	2.0	^a
1806	15.1	0.1	0.8	10.2	1.2	2.0	2.6
1807	16.8	^f	0.7	9.4	0.8	2.6	4.6
1808	17.0	^f	0.5	10.6	1.3	1.3	4.4
1809	7.8	^f	0.6	10.5	0.1	7.4	-9.5
1810	9.1	^f	0.7	8.9	0.2	-0.1	0.6
1811	13.8		0.8	8.1	0.1	8.3	-1.8
1812	9.5		0.9	19.3	0.3	-10.1	0.9
1813	13.7		0.9	30.7	0.1	-18.6	2.4
1814	6.9	3.3	1.2	33.2	^f	-18.9	-2.8
1815	8.0	5.9	1.4	31.2	^f	-23.5	7.5
1816	37.1	9.1	1.6	31.4	^f	11.9	4.6
1817	26.6	4.7	1.9	22.9	^f	18.5	-8.2
1818	17.9	1.2	3.7	21.4	4.7	1.2	-4.7
1819	21.3	0.2	2.6	21.4	0.9	1.2	0.6
1820	16.1	0.1	1.7	19.3	1.7	-1.4	-1.6
1821	13.7	^f	1.5	17.5	2.1	-3.8	-0.4
1822	18.6	^f	1.7	15.8	0.1	2.7	1.9
1823	20.0	^f	1.0	15.6		0.6	4.8
1824	19.0	^f	1.0	21.2		-0.3	-0.8
1825	21.3	^f	1.5	16.6		9.2	-2.7
1826	24.6	^f	1.1	17.4		5.8	2.4
1827	20.8		1.6	17.1	-1.3	7.1	-0.6
1828	24.6		1.1	17.2		5.8	2.8
1829	23.9		1.7	16.1		11.8	-2.1

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INCOME ORIGINATING, BY SECTOR

TABLE 11 concluded

Year	SOURCES: NET RECEIPTS ^a			USES: NET PAYMENTS			
	Customs	Internal Taxes ^b	Land Sales	Total Net Income ^c	Foreign Non-income ^d	Public Debt and Other Securities ^e	Cash Balance Change and New Money
1830	23.3		2.3	15.7		12.7	-2.9
1831	25.6		3.3	16.3	-0.5	11.6	1.5
1832	30.2		2.8	18.2		14.0	0.8
1833	30.2		4.2	21.7	-0.2	7.1	5.8
1834	17.7		5.9	20.3		4.3	-0.9
1835	21.2		16.0	18.2	-0.4	2.1	17.2
1836	26.0		27.1	28.4		2.4	22.3
1837	12.8		7.0	64.5	-4.6	-3.0	-37.0
1838	21.3		4.0	33.8	-1.4	-8.0	1.0
1839	20.9		6.3	29.6	-0.5	4.7	-6.2
1840	14.9		2.7	27.5	-0.4	-3.3	-5.9
1841	16.0		1.4	26.7	-0.2	-8.4	-0.8
1842	19.2		1.4	26.9	-0.1	-7.6	1.3
1843 ^g	7.4		0.9	12.8	-0.2	-12.3	7.9
1844	28.1		1.9	23.7	-0.6	9.3	-2.4
1845	29.7		2.2	23.2		7.8	0.6
1846	29.0		3.0	27.3		0.5	4.2
1847	23.5		2.5	47.4	-0.1	-22.8	1.3
1848	32.8		3.6	51.7	-0.1	-8.3	-6.8
1849	30.6		1.9	44.2	4.3	-16.3	0.4
1850	39.8		1.3	33.0	5.3	-0.4	3.2
1851	47.9		2.4	40.6	3.3	0.6	5.7
1852	46.7		1.8	42.1	3.2	2.2	1.0
1853	57.8		1.8	46.4	-0.1	6.9	6.5
1854	63.1		8.7	44.5	7.9	20.6	-1.1
1855	52.0		10.5	54.5	0.3	7.6	0.1
1856	62.5		8.6	58.4	3.0	10.3	-0.4
1857	61.8		3.6	62.8		4.9	-2.5
1858	41.1		2.8	69.9	0.4	-14.5	-11.7
1859	48.1		1.3	66.3		-14.2	-2.7
1860	51.7		1.6	62.7		-6.9	-2.4

A minus sign for a use indicates an excess of receipts. Figures for 1790-1842 are calendar years; subsequent figures are fiscal years ending June 30.

^a A small amount of miscellaneous receipts are omitted.

^b Minute sums of arrears continued to trickle in long after accrual had ceased. Most of those were actually payments to the Treasury by collectors and have therefore not been shown.

^c Includes purchases of goods and services, transfer payments and subsidies, and income payments to states and foreigners. Cf. Table 10.

^d Includes indemnity payments and receipts and redemption of federal securities directly placed abroad by the government.

^e Debt retirement and purchase of nonfederal securities; includes redemption of federal securities held by states and federal transactions in state securities.

^f Less than \$50,000.

^g Six months.

U.S. GOVERNMENT AND NATIONAL INCOME, 1790-1860

TABLE 12
Federal Transfer Payments and Subsidies, Annually, 1811-1860
(millions of dollars)

<i>Year</i>	<i>Pensions</i>	<i>Fishing Bounties</i>	<i>Indian Payments</i>	<i>Interest Paid^a</i>	<i>Less Interest and Dividends Received</i>	<i>Other</i>	<i>Net Paid</i>
1811	0.1		b	0.7	b	b	0.8
1812	0.1			1.4	b	b	1.5
1813	0.1		b	2.3		0.1	2.4
1814	0.1		b	3.4	b	0.1	3.6
1815	0.1	b	b	4.5	b	0.1	4.7
1816	0.2	0.1	b	6.1	b	0.2	6.4
1817	0.3	0.1	b	5.9	0.2	0.7	6.6
1818	0.6	0.2	0.1	4.9	0.5	0.3	5.4
1819	1.9	0.2	0.1	4.4	0.7	0.4	6.3
1820	2.1	0.2	0.1	4.1	1.0	0.1	5.6
1821	1.7	0.2	0.1	3.8	0.1	0.1	5.8
1822	1.9	0.2	0.2	3.9	0.3	b	5.8
1823	1.9	0.2	0.1	3.7	0.4	0.1	5.7
1824	1.7	0.2	0.1	4.1	0.4	5.2	10.9
1825	1.4	0.2	0.3	3.5	0.4	0.3	5.5
1826	1.5	0.2	0.3	3.0	0.4	0.4	5.0
1827	1.3	0.2	0.4	2.6	0.4	0.4	4.4
1828	1.2	0.2	0.3	2.2	0.5	0.9	4.4
1829	1.3	0.3	0.4	1.8	0.5	b	3.3
1830	1.5	0.2	0.2	1.4	0.5	0.3	3.1
1831	1.5	0.2	0.2	1.0	0.5	0.1	2.5
1832	1.6	0.2	0.3	0.6	0.5	0.6	2.7
1833	3.9	0.3	0.4	0.3	0.5	0.9	5.2
1834	4.3	0.2	0.4	0.2	0.3	0.4	5.0
1835	2.6	0.2	0.5	0.1	0.6	0.6	3.4
1836	2.4	0.2	0.3	b	0.4	0.4	2.9
1837	3.2	0.3	0.2	b	0.6	4.5	7.7
1838	2.1	0.3	0.8	0.1	0.9	1.4	3.7
1839	3.3	0.3	0.8	0.3	0.1	0.8	5.4
1840	3.3	0.3	1.1	0.2	0.4	0.5	5.1
1841	2.3	0.3	1.1	0.3	0.2	0.1	3.9
1842	1.7	0.4	0.7	0.7	0.1	0.3	3.7
1843 ^c	0.8	0.2	0.2	0.4		0.8	2.4
1844	1.8	0.2	0.5	1.6	b	0.6	4.7
1845	1.9	0.3	0.7	0.9	b	0.3	4.1
1846	2.1	0.3	0.5	0.5		0.3	3.7
1847	1.8	0.3	0.6	0.7		0.3	3.7
1848	1.6	0.2	0.6	1.7	b	0.3	4.4
1849	1.2	0.3	0.6	2.6	b	2.4	7.1

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INCOME ORIGINATING, BY SECTOR

TABLE 12 concluded

Year	Pensions	Fishing Bounties	Indian Payments	Interest Paid ^a	<i>Less</i> Interest and Dividends Received	Other	Net Paid
1850	1.9		0.7	2.7		0.4	5.7
1851	1.8		1.2	2.1	0.1	2.2	7.2
1852	2.3		1.8	2.3		0.7	7.1
1853	2.3		2.1	1.9	0.1	1.1	7.3
1854	1.4		0.7	1.7	0.1	0.3	4.0
1855	1.8		1.2	1.1	b	0.8	4.9
1856	1.4		2.0	0.9	b	0.4	4.7
1857	1.3		1.4	0.8	0.1	1.2	4.6
1858	1.2		1.1	0.8	b	0.5	3.6
1859	1.2		1.2	1.4	b	0.4	4.2
1860	1.1		1.0	1.7	b	0.5	4.3

Figures for 1790-1842 are for calendar years; 1843 figure is January-June; all subsequent figures are for fiscal year ending June 30.

^a Includes only interest paid to domestic business firms and individuals, excludes that to foreigners and state governments.

^b Less than \$50,000.

^c Six months.

TABLE 13
Federal Purchases of Goods and Services, Annually, 1811-1860
(millions of dollars)

Year	Compensation	Construction ^a	Other Purchases	<i>Less:</i> Sales	Net Purchases
1811	3.1	0.2	3.1	-0.7	5.6
1812	6.4	0.4	10.4	-0.8	16.4
1813	11.0	1.1	16.1	-1.0	27.2
1814	12.7	1.7	16.2	-0.9	29.6
1815	11.5	1.9	14.4	-1.3	26.5
1816	11.8	1.0	11.0	-1.2	22.6
1817	6.0	1.3	7.2	-1.1	13.4
1818	6.2	1.8	7.1	-1.2	13.9
1819	5.7	2.7	6.3	-1.3	13.3
1820	6.4	2.3	4.7	-1.2	12.2
1821	5.7	1.5	3.9	-1.1	10.0
1822	4.7	1.0	4.1	-1.2	8.6
1823	4.9	0.9	3.8	-1.2	8.4
1824	5.4	0.9	3.9	-1.2	9.0

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U.S. GOVERNMENT AND NATIONAL INCOME, 1790-1860

TABLE 13 concluded

<i>Year</i>	<i>Compensation</i>	<i>Construction^a</i>	<i>Other Purchases</i>	<i>Less: Sales</i>	<i>Net Purchases</i>
1825	5.5	1.8	3.6	-1.3	9.6
1826	6.0	2.1	4.5	-1.5	11.1
1827	6.1	2.1	4.7	-1.6	11.3
1828	6.2	1.5	5.6	-1.7	11.6
1829	6.2	1.7	5.7	-1.8	11.8
1830	6.3	1.7	5.6	-2.0	11.6
1831	6.9	1.8	5.8	-2.1	12.5
1832	7.3	1.7	7.7	-2.5	14.2
1833	8.5	2.4	7.8	-2.7	16.0
1834	8.0	2.1	7.6	-2.9	14.8
1835	8.1	2.6	7.2	-3.3	14.6
1836	10.2	3.4	14.2	-3.7	24.1
1837	11.6	4.1	16.5	-4.3	27.9
1838	11.7	2.9	19.8	-4.7	29.7
1839	11.0	2.8	14.9	-4.7	24.1
1840	11.3	1.5	13.6	-4.6	21.8
1841	11.3	1.5	14.1	-4.5	22.4
1842	11.6	1.7	13.5	-4.6	22.2
1843 ^b	5.6	0.7	5.5	-2.2	9.6
1844	11.4	1.1	10.0	-4.4	18.1
1845	11.3	1.5	10.2	-4.5	18.5
1846	12.1	1.7	12.3	-3.6	22.5
1847	17.0	1.4	27.4	-4.0	41.8
1848	20.5	2.0	29.3	-4.6	47.2
1849	13.7	3.2	24.6	-5.9	35.6
1850	13.6	3.1	15.0	-5.9	25.8
1851	15.1	2.4	20.5	-6.7	31.3
1852	16.8	2.3	19.1	-5.5	32.7
1853	18.1	3.0	21.8	-5.7	37.2
1854	18.9	4.4	22.3	-6.8	38.8
1855	21.7	7.8	25.4	-7.2	47.7
1856	23.2	7.2	29.7	-7.8	52.3
1857	25.1	8.8	30.7	-8.3	56.3
1858	25.8	10.7	36.3	-8.3	64.5
1859	26.3	9.4	33.3	-8.7	60.3
1860	25.4	5.0	35.0	-9.6	55.8

Figures for 1790-1842 are for calendar years; 1843 figure is January-June; all subsequent figures are fiscal year ending June 30.

^a For net new construction, excluding repairs and replacement, and estimated direct federal wage payments, but including construction of naval vessels.

^b Six months.

INCOME ORIGINATING, BY SECTOR

NATIONAL INCOME ESTIMATES

The subject of national income estimates for the years before 1860 has generated a controversy to which it is not my purpose to contribute. The range estimates presented in Table 5 were determined by comparing three sets of estimates: the much-disputed series of Martin; a little-known series by Norman Silberling; and a series of my own derived by adjusting Martin's data, taking into account the criticisms of Kuznets.⁹ These figures are given in Table 14.

TABLE 14
National Income Estimates in Current Prices, Census Years, 1790-1860
(millions of dollars)

Year	Martin ^a	Silberling ^b	Trescott	Estimated Range	Contemporary Estimates ^c
1790			344	340-500	168
1799-1800	677	734	472	460-700	
1809-10	915	841	700	690-900	
1817					773
1819-20	876	882	865	790-960	
1829-30	975	1,034	1,100	930-1,165	1,100
1839-40	1,631	1,995	1,775	1,600-2,000	
1846					3,000
1849-50	2,420	2,435	2,500	2,160-2,640	
1859-60	4,311	3,603	4,300	3,600-4,400	

^a Martin, p. 79.

^b Silberling, p. 702.

^c 1790's: By Thomas Cooper, as quoted in *Niles Register*, 1814, Vol. 5, p. 405. 1817: By Hezekiah Niles, as quoted in *ibid.*, Vol. xvi, 1817, p. 386. 1829-30: By Niles, as quoted in William M. Gouge, *An Inquiry into the Principles of the American Banking System*, B. and S. Collins, New York, 1835, p. 34. 1846: Secretary of the Treasury Robert Walker, 30th Cong., 1st sess., H. Doc. 6, p. 22.

My series was calculated by adopting Kuznets' view that productivity per worker increased about 20 per cent in agriculture and about 25 per cent in other employment between 1800 and 1840. I worked back from Martin's 1860 figure, assumed to be correct because of its rough correspondence to Kuznets' own for after the Civil War. Figures for 1850 and 1840 were derived by applying to total output the rates of

⁹ Martin's figures are presented best in *Studies in Enterprise and Social Progress*, National Industrial Conference Board, 1939. See also Simon Kuznets, "National Income Estimates for the United States Prior to 1870," *Journal of Economic History*, June 1952; and Norman J. Silberling, *The Dynamics of Business*, McGraw-Hill, 1943, pp. 685-702. Controversial aspects are reviewed in the paper by William N. Parker and Franklee Whartenby included in this volume.

growth shown by Warren and Pearson for physical volume of production.¹⁰ From 1840 back, figures were derived by breaking down totals into product per worker in agriculture and elsewhere. First I calculated the figure for 1800 by using Kuznets' productivity estimates, then interpolated the intermediate years to show an increasing rate of productivity increase for the whole period. For 1790, productivity per worker was assumed to be the same as in 1800. The result is a measure of trend values and makes no allowance for unemployment. All calculations were made in constant prices, then converted to current.

The resulting series stands appreciably above Martin's for 1839 and 1849, and much below it for 1799 and 1809. There seems little doubt that his figures are too high for the early years.¹¹ However, mine are probably on the low side for those dates.

Silberling's figures, which are apparently not widely known, do not command as much respect as Martin's, to which they are surprisingly close. Silberling derived his final figures by multiplying a price index by an index of production and trade. The latter has two components, one representing the real volume of imports, and the other an estimate of agricultural production, the latter assumed to be in constant proportion to population.

The estimated range used in this paper was determined intuitively from these three series. It was set up to show a spread of at least plus-minus 10 per cent of the mean of the extremes, but the earlier years' figures have even more dispersion. The estimates by contemporaries are presented as collectors' items and were not used in making estimates.

¹⁰ See Simon Kuznets, *National Product Since 1869*, National Bureau of Economic Research, 1946, pp. 119-120; and George F. Warren and Frank A. Pearson, *Prices*, Wiley, 1933, p. 44.

¹¹ For a confirming view, see J. P. Wernette, *Financing Full Employment*, Harvard University Press, 1945, p. 36.

