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The Totals in Current Prices

NATIONAL INCOME may be described as the net value of the services individuals and their property contribute to the production of economic goods or as the value of commodities and services produced by the country's economic system after the costs of the commodities (raw materials and capital equipment) and of services of enterprises consumed in the production process have been deducted.

In these definitions the adjective *net* must be emphasized; i.e., national income does not measure the value of all transactions in either industrial or financial circulation. Their gross value is many times greater than national income. A given commodity or service, or its components, may be bought and sold several times during the year, entering repeatedly into total transactions. But the only part that enters national income is the net value of the services of labor, capital, and enterprise embodied in the given commodity or service in its flow to ultimate consumers or in its entrance into the inventory holdings of enterprises or in the balance of international payments. Compared with the value of transactions or of gross product, which may differ with the amount of duplication involved, national income or net product is a much smaller and a single value total.

Furthermore, national income does not include the net value of *all* commodities and services produced in the country during the year. A considerable group of services and some commodities, e.g., housewives' services and hobby products, are excluded because their production is outside the field of economic activity proper. Some minor activities on the borderline between economic and non-economic, e.g., urban gardening or cowkeeping, and many occasional and incidental earnings are omitted for lack of data. Still other activities, which yield income to some individuals, are excluded because they do not contribute to the country's output of economic goods.

National income may also be described as the sum of all payments by enterprises to individuals as individuals (not as entrepreneurs) and of the net savings of enterprises after all costs and disbursements sustained in the production process have been deducted. Payments to individuals are predominantly in compensation for services rendered either by the individuals themselves or by their property—wages, salaries, entrepreneurial withdrawals, interest, dividends, rents. They include, however, some few payments that are not in compensation for any activity of either individuals or their property, but that must be taken into account as part of the net value product of enterprises (pensions, compensation for injury, direct relief payments, etc.). Whether net savings of entrepreneurs should be included under disposable payments to individuals or be treated, similarly to the savings of corporations, as undistributed income, is another matter. The broader aggregate of payments to individuals, including entrepreneurial savings, is shown in Table 1, column 2; that excluding entrepreneurial savings, in column 3.

The commodities and services that comprise the net product of the nation's economic activity during the year may pass to ultimate consumers to satisfy their wants, be added to the stocks of goods held by enterprises within the country, or flow abroad, adding to the claims against foreign countries. The last two uses represent additions to the country's capital goods, a process the quantitative aspects of which are discussed in *Commodity Flow and Capital Formation,* Volume One. The totals of net capital formation given there can be subtracted from the national income totals to yield the value of goods and services flowing to ultimate consumers—consumers' outlay (Table 1, col. 4).[1]

[1] See also *Bulletin 74,* Commodity Flow and Capital Formation in the Recent Recovery and Decline, 1932–1938. Revised estimates of capital formation have been used to pass from national income to consumers' outlay.

We present aggregate payments and consumers' outlay as components of the more comprehensive total, national income. Yet they may be regarded as in some respects better

TABLE 1

National Income,* Aggregate Payments to Individuals, and Consumers' Outlay, Current Prices, 1919–1938

	BILLIONS OF DOLLARS				INDEXES (1919–38=100)			
		Agg. pay. to individuals				Agg. pay. to individuals		
	National income	incl. entrep. savings	excl. entrep. savings	Consumers' outlay	National income	incl. entrep. savings	excl. entrep. savings	Consumers' outlay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1919	63.6	64.4	59.0	53.4	95.6	96.8	89.4	86.4
1920	75.5	69.9	68.5	62.1	110.5	105.2	103.8	100.6
1921	59.1	57.7	57.1	55.8	88.8	86.8	86.5	90.5
1922	60.6	59.6	59.7	56.1	91.0	89.6	90.4	90.9
1923	71.4	69.0	67.9	62.8	107.2	103.8	102.8	101.8
1924	71.9	69.9	69.1	66.0	108.0	105.2	104.6	107.0
1925	75.9	73.6	72.0	66.6	114.0	110.7	109.0	107.9
1926	81.4	77.1	75.0	72.2	122.3	116.0	113.6	116.9
1927	79.9	77.2	76.1	71.8	120.0	116.1	115.3	116.3
1928	81.6	78.8	77.9	74.2	122.5	118.6	118.1	120.2
1929	87.1	83.5	82.4	77.1	130.9	125.5	124.8	124.9
1930	77.3	75.9	76.5	73.1	116.0	114.1	115.9	118.4
1931	60.5	63.0	65.1	60.2	90.6	94.8	98.5	97.5
1932	45.0	48.6	52.1	47.2	64.6	73.1	78.9	76.4
1933	42.5	46.5	48.7	45.9	63.5	69.7	73.7	74.3
1934	49.6	53.4	53.8	52.2	74.4	80.3	81.4	84.5
1935	54.4	58.2	58.0	53.7	81.7	87.6	87.9	87.0
1936	62.9	65.8	64.5	57.6	94.5	98.9	97.7	93.3
1937	70.5	71.4	71.0	64.1	105.9	107.4	107.5	103.9
1938	65.4	66.3	66.1	62.5	98.2	99.8	100.1	101.3
Average								
1919–38	71.9	69.7	68.2	64.1	108.0	104.9	103.4	103.8
1929–38	61.3	63.2	63.8	59.3	92.0	95.1	96.6	96.1
1919–38	66.6	66.5	66.0	61.7	100.0	100.0	100.0	100.0
Percentage change 1919–38 to 1929–38	—14.8	—9.5	—6.5	—7.4				

* In the estimates of national income and of aggregate payments to individuals including entrepreneurial savings, shown here and in subsequent tables, savings of enterprises are adjusted for (a) effects of changes in inventory valuation, (b) disparity between depreciation charges on cost and on reproduction bases, (c) gains and losses on sales of capital assets.

indicators of the net contribution of the economic system. If our interest is primarily in the current contribution of the nation's economy to the purchasing power of its inhabitants, aggregate payments to individuals are a somewhat better gauge than national income, since net savings of enterprises, or at least of corporations, are not part of the flow of means of payment to ultimate consumers and cannot immediately and directly affect their share in the nation's product. It may further be argued that the amounts received by individuals but not spent on consumption goods do not represent a current contribution to individuals' welfare; and that consumers' outlay is a better measure of what the economic system yields currently to individuals.[2]

The annual average of national income, 1919–38, was $66.6 billion; of aggregate payments to individuals including entrepreneurial savings, $66.5 billion; of aggregate payments excluding entrepreneurial savings, $66.0 billion; and of consumers' outlay, $61.7 billion. These averages conceal marked fluctuations. The broad movement over the period is clearly downward in all four, the decline from the first decade to the second amounting to 15 per cent in national income, 10 per cent in aggregate payments including entrepreneurial savings, and to a somewhat smaller percentage in the other two totals. But this movement is obviously dominated by the severe contraction that developed after 1929. The greater severity of this contraction in national income explains why the decline over the period as a whole is more pronounced in it than in the other three totals.

That this decline over the period can hardly be considered an approximation to the secular trend is seen when we go further back. With the help of W. I. King's estimates [3] we

[2] Estimates of consumers' outlay are subject to a wider relative margin of error than estimates of national income or of aggregate payments, especially their year-to-year fluctuations.

[3] *The National Income and Its Purchasing Power* (National Bureau of Economic Research, 1930).

can construct a roughly continuous series for one of the income totals, aggregate payments to individuals excluding entrepreneurial savings, since 1909. The broad sweep over the thirty years is upward, and the long term significance of the decline after the 1914–18 War is extremely uncertain. Of course, it is possible that the downward movement of the more recent years will continue. But it seems more plausible to view it as the downward phase of a prolonged swing which

TABLE 2

Aggregate Payments to Individuals excluding Entrepreneurial Savings, King's and Present NBER Estimates
Selected Periods, Current Prices, 1909–1938

	AVERAGE VALUE PER YEAR (*billions of dollars*)		INDEXES (1919–23 = 100)	
	Based on King	Present NBER estimates	Based on King	Present NBER estimates
	(1)	(2)	(3)	(4)
1909–13	30.7		47.7	
1911–15	33.0		51.3	
1914–18	41.7		64.7	
1916–20	53.3		82.7	
1919–23	64.5	62.5	100.0	100.0
1921–25	69.3	65.2	107.4	104.3
1924–28		74.0		118.6
1926–30		77.6		124.3
1929–33		64.9		104.0
1931–35		55.5		88.9
1934–38		62.7		100.3
1909–18			56.2	
1919–28			109.3	
1929–38			102.2	

Entries in col. 1 are based upon King's estimates adjusted to assure greater conformity in scope with our estimates. The indexes in col. 3 are based upon the assumption that the relative discrepancy between King's and our estimates for 1919-23 would also characterize his estimates for the years before 1919. It might have been more reasonable to ascribe such validity to the discrepancy between King's and our estimates for 1919–20 alone. On this assumption, the entry in col. 1 for 1919–23 would be $62 billion and the indexes for earlier years in col. 3 would be raised accordingly. But this small change would not affect the broad picture revealed by Table 2.

may soon be succeeded by a resumption of the long term rise (Table 2).

The totals in current prices reflect cyclical fluctuations. Some, such as the decline from 1920 to 1921, the sustained rise from 1921 to 1929, and the drastic contraction from 1929 to 1932, are obvious. Others can be established only

TABLE 3

Changes in Income Totals during Reference Cycles

Current Prices, 1919–1938

All measures of change are on a per year basis and are in percentages of the average value of the series for each full reference cycle. The dates used are those established by Wesley C. Mitchell and Arthur F. Burns in the National Bureau's study of business cycles.

	NATIONAL INCOME	AGGREGATE PAYMENTS TO INDIVIDUALS		CONSUMERS' OUTLAY
		Incl. entrep. savings	Excl. entrep. savings	
	(1)	(2)	(3)	(4)
Cycle 1919–21				
Change, 1919-20	+14.6	+8.5	+15.1	+15.0
Change, 1920–21	−21.3	−18.7	−18.1	−10.7
Difference	−35.9	−27.2	−33.2	−25.7
Cycle 1921–24				
Change, 1921–23	+9.4	+8.8	+8.5	+5.8
Change, 1923–24	+0.7	+1.4	+1.9	+5.4
Difference	−8.7	−7.4	−6.6	−0.4
Cycle 1924–27				
Change, 1924–26	+6.1	+4.8	+4.0	+4.4
Change, 1926–27	−1.9	+0.2	+1.5	−0.6
Difference	−8.0	−4.6	−2.5	−5.0
Cycle 1927–32				
Change, 1927–29	+4.9	+4.3	+4.3	+3.8
Change, 1929–32	−20.0	−16.0	−13.8	−14.5
Difference	−24.9	−20.3	−18.1	−18.3
Cycle 1932–38				
Change, 1932–37	+9.9	+7.8	+6.4	+6.2
Change, 1937–38	−9.1	−8.6	−8.2	−2.9
Difference	−19.0	−16.4	−14.6	−9.1
Average for 5 reference cycles				
Change during expansion	+9.0	+6.8	+7.7	+7.0
Change during contraction	−10.3	−8.3	−7.3	−4.7
Difference	−19.3	−15.2	−15.0	−11.7

upon further analysis. A simple measure of the fluctuations during reference cycles is given in Table 3.[4]

Every reference cycle established for the American economy since 1919 is reflected in our four totals. All rise during each reference expansion and decline during contractions except the mild recession from 1926 to 1927 and, more surprisingly, the contraction from 1923 to 1924. Uniformly, the fluctuations in national income are greater than in aggregate payments or in consumers' outlay. There is a less significant difference in this respect between the two totals of aggregate payments; but, by and large, the total including entrepreneurial savings seems to fluctuate more during reference cycles than the total excluding them. Both fluctuate more during reference cycles than does consumers' outlay, except during the 1924-27 cycle. These differences in behavior, as well as the consistency with which the various income totals reflect reference cycles, conform to expectations based upon other knowledge concerning the cyclical behavior of net business savings, income payments, and consumers' outlay.

Adjustment for Price Changes

The estimates discussed above are in current prices, measuring the net value of product at the changing price levels that prevailed on the market during each year; totaling payments to individuals without allowance for changes in their purchasing power; gauging the value of consumers' outlay at prices varying from year to year. Obviously, any change in these totals cannot be interpreted as a change in the basket of commodities and services unless some allowance is made for the effect of fluctuations in prices on the purchasing power of money.

Adjustment for price changes may, however, be made for various purposes, which will, or should, find expression in

[4] See *Bulletin 57*, The National Bureau's Measures of Cyclical Behavior.

different procedures. And while one's eventual choice of procedure is severely limited by the available data, we venture a few comments on the possibilities.

No adjustment can be expected to correct for the fundamental effects of price fluctuations on output and economic activity at large. One can merely conjecture what national income, aggregate payments, or consumers' outlay would have been had no commodity or service changed in price. The output of goods would have been vastly different, but from the output of the economy as it actually operated under conditions of fluctuating price levels there is no way of inferring its quantity, in tolerably precise terms. Such adjustment is impossible whether we are concerned with the effects of changes in prices of various groups of goods or of changes in the more nebulous general price level. Even were it possible, there is independent utility in the kind of correction for price changes that we make.

Granted that changes in the amount of commodities and services comprised in the income totals have been determined in the past by fluctuating price levels (among other factors), how can we measure changes in the real contents of these current value totals separately from the changes in prices at which the commodities and services are weighted when they enter the totals in current prices? The answer depends largely upon the choice of the basket of goods to be taken into account in measuring price changes and adjusting the totals expressed in dollars of current purchasing power. An investigator can attempt to take into account commodities and services in the varieties and quantities that actually characterized the economy in the years under study or he can attempt to adjust for the fluctuating prices of some hypothetical basket of goods, whether definitely specified or only vaguely implied. To adjust consumers' outlay by the first method would demand (1) a breakdown of total consumers' outlay in current prices into as many groups of commodities and services as can be distinguished, based on

data that reflect changes throughout the period; (2) indexes of prices of each category of commodities and services. Adjustment would be carried through for each category, and the adjusted total of consumers' outlay obtained by addition. The second type of adjustment would begin by assuming a hypothetical basket of goods, let us say that comprised in a standard subsistence budget for a family of five of a specified age and sex composition. The cost of goods bought on this budget would then be evaluated at current prices, for each year in the period, and a price index derived; its application to total consumers' outlay in current prices would yield total consumers' outlay in dollars of constant purchasing power.

Since we wish to measure the actual course of the economy, taking into account the full variety of the changes, the adjustment we attempt is of the first type. If we could, we would distinguish all the various groups of commodities and services that enter consumers' outlay, are bought with the aggregate receipts by individuals from enterprises (including investment goods), or are comprised in national income. But limitations of data necessitate a compromise. We are forced to use approximate price indexes for large groups of goods in which the prices of various goods are given weights not necessarily conforming to the quantities currently appearing in the income totals and which, therefore, may give an 'economic' bias [5] to the price indexes. But as will be seen below, the price measures used have implicit weights, most of which are quantities of goods relating to the period covered by the income estimates, or to a period close to it; and the brevity of the period covered by our estimates

[5] Because relative changes in prices cause changes in quantities demanded and produced. Keeping quantities constant may underweight the importance of goods whose price (relative to the prices of other goods) has declined and the demand for which has in consequence increased. On the other hand, prices may decline when demand slackens. If so, a lowering of the price relative to the prices of other goods may be correlated with a diminution rather than an increase in the quantity produced.

lessens the danger of substantial bias arising from improper weighting.

We began with the adjustment of consumers' outlay for price changes, carrying through two variants. For the first (Table 4, col. 1), expenditures on passenger cars were corrected for price changes on the basis of the Bureau of Labor Statistics index. For the rest of consumers' outlay an index was derived by weighting, by non-farm population, the Bureau of Labor Statistics cost of living index, and, by farm population, the Bureau of Agricultural Economics index of prices paid by farmers for subsistence goods. The second variant (col. 2) was based largely upon the price adjustment work in the capital formation study. The flow to consumers of perishable, semidurable, and durable commodities was measured in 1929 prices. The only part of consumers' outlay that still had to be adjusted for price changes was the outlay on services not embodied in new commodities. For this purpose we utilized the various group indexes in the Bureau of Labor Statistics cost of living index, choosing those that represented preponderantly direct services.[6] The differences between the indexes used in the two variants are minor. We used both variants to reduce consumers' outlay in current prices to 1929 prices, and averaged the two sets of results (Table 5, col. 4;[7] the corresponding price index appears in Table 4, col. 3).

From consumers' outlay in 1929 prices we derived national income in 1929 prices by adding net capital formation in 1929 prices, from the capital formation study, to it. The implicit price index is given in Table 4, column 6.

The differences between national income and both totals

[6] With weights as provided in BLS bulletins. The groups chosen were rent, fuel and light, and miscellaneous (made up chiefly of services).

[7] We used 1929 as the base year because it was the basic year in the capital formation study from which most of the price adjustments were derived. But the price level for that single year is only slightly different from the average for 1924–26, and even for 1919–28.

of aggregate payments, as well as between the latter and consumers' outlay, represent shares in net capital formation. These shares, in current prices, can be derived (from the estimates in Table 1) by simple subtraction. To obtain the two totals of aggregate payments in 1929 prices we assumed that the relative shares of entrepreneurial savings and of individuals' savings (i.e., the difference between the

TABLE 4

Comparison of Comprehensive Price Indexes (1929 = 100)

	INDEXES IMPLICIT IN THE ADJUSTMENT OF INCOME TOTALS FOR PRICE CHANGES						BLS INDEXES	
	CONSUMERS' OUTLAY			Agg. pay. to individuals		National income	Cost of living	Wholesale price
	Var. I	Var. II	Avg.	incl. entrep. savings	excl. entrep. savings			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1919	111.4	109.6	110.5	113.1	111.9	112.9	101.6	145.4
1920	124.5	123.2	123.9	126.4	126.0	127.4	116.9	162.0
1921	104.0	105.4	104.7	105.0	104.9	105.2	104.2	102.4
1922	98.2	99.9	99.1	99.7	99.7	99.8	97.7	101.5
1923	99.9	101.7	100.8	101.2	101.1	101.3	99.5	105.6
1924	99.9	100.3	100.1	100.4	100.4	100.6	99.8	102.9
1925	102.4	102.9	102.6	102.8	102.8	102.8	102.4	108.6
1926	102.3	103.3	102.8	103.0	102.9	103.2	103.2	104.9
1927	100.7	100.2	100.4	100.5	100.5	100.5	101.2	100.1
1928	100.2	101.1	100.6	100.7	100.7	100.7	100.1	101.5
1929	100.0	100.4	100.2	100.2	100.2	100.2	100.0	100.0
1930	96.5	97.0	96.8	96.7	96.7	96.7	97.5	90.7
1931	86.6	87.6	87.1	86.7	86.4	87.1	88.7	76.6
1932	77.1	77.0	77.1	77.0	76.9	77.2	79.7	68.0
1933	74.0	74.6	74.3	74.2	74.3	74.4	75.4	69.2
1934	78.3	80.4	79.3	79.1	79.1	79.8	78.1	78.6
1935	80.2	84.6	82.3	86.0	85.8	82.9	80.1	83.9
1936	80.4	85.3	82.8	84.3	84.1	83.8	80.9	84.8
1937	85.5	89.1	86.2	87.4	87.3	87.3	83.8	90.6
1938	81.5	83.7	82.6	82.9	82.9	82.8	82.3	82.5
Average								
1919–28	104.4	104.8	104.6	105.3	105.1	105.4	102.7	113.5
1929–38	83.8	86.0	84.9	85.5	85.4	85.2	84.6	82.5
1919–38	94.1	95.4	94.7	95.4	95.2	95.3	93.7	98.0
Percentage change 1919–28 to 1929–38	−19.7	−17.9	−18.8	−18.8	−18.7	−19.2	−17.6	−27.3

two totals of aggregate payments and that between aggregate payments, excluding entrepreneurial savings, and consumers' outlay) in total net capital formation were, for each year in the period, the same for values in both current and 1929 prices. While this assumption may be erroneous, so far as savings of individuals, of entrepreneurs, and of corporations may be embodied in types of capital formation characterized by different price movements, absence of information led us to accept it as a plausible basis for the most consistent procedure. Accordingly, we applied to total net capital formation in 1929 prices the percentages in each year of total net capital formation in current prices that could be attributed to entrepreneurial and individuals' savings. This gave us the magnitudes of these two types of savings embodied in net capital formation in 1929 prices; adding them to consumers' outlay in 1929 prices yielded estimates of aggregate payments, including and excluding entrepreneurial savings, in 1929 prices. The implicit price indexes are given in Table 4, columns 4 and 5.

All indexes in Table 4 show a declining trend over the period as a whole and fairly similar patterns of shorter term movements: a decline from a peak in 1920 to a trough in 1922; a relatively moderate rise to a peak in 1925-26; a drastic fall to a trough in 1932 or 1933; a recovery to a peak in 1937; and a decline from 1937 to 1938.

The indexes implicit in the four income totals (col. 1-6) move in close conformity. That implicit in national income declines somewhat more from 1920 to 1922 than the other three; and that implicit in consumers' outlay rises somewhat more from 1922 to 1926. But the differences are quite minor for the simple reason that consumers' outlay and aggregate payments each constitutes such a large percentage of national income. More significant differences appear between the indexes implicit in the income totals and those representing wholesale commodity prices and wage earners' cost of living. In general, the income price indexes show

movements over the period or cyclical variations intermediate in amplitude between those in wholesale commodity prices and the cost of living. The decline over the period in the income price indexes is not as great as in wholesale commodity prices but greater than in the cost of living. The cyclical rises and declines in the income price indexes are uniformly less pronounced than in wholesale commodity prices, but more pronounced than in the cost of living (except in the rise from 1919 to 1920). These differences are to be expected since the income totals include both consumers' outlay, made at retail prices represented in the cost of living index, and capital formation, investment outlays made at wholesale prices represented in the wholesale commodity price index.

The Totals in 1929 Prices

Adjustment for price changes has several results (Table 5). First, it affects materially the general trend over the period, canceling the decline apparent in the four totals in Table 1. Tables 1, 4, and 5 indicate quite clearly that the downward movement of the totals in current prices was due to a decline in the price level, not in real product.

The upward tendency over the period in the totals in 1929 prices is least pronounced in national income and most pronounced in aggregate payments excluding entrepreneurial savings. The rise in consumers' outlay is somewhat smaller than in the latter.

Here again we take advantage of Dr. King's estimates for years prior to 1919 to paint a broader picture of the movement of an income total adjusted for changes in the price level. Several conclusions are suggested by the estimates of aggregate payments excluding entrepreneurial savings (Table 6). First, while the rise over the period is not as marked as in the totals in current prices (see Table 2), it is still substantial even after adjustment for the effects of a rising price level—more than 50 per cent over 25 years (from

1909–13 to 1934–38), or on the basis of decennial averages, more than 40 per cent over 20 years (from 1909–18 to 1929–38). Second, while the percentage rise from the second to the third decade is smaller than from the first to the second, the quinquennial averages suggest that this retardation is due exclusively to the pronounced depression of 1929–32. Thus the rise from 1909–13 to 1919–23 is relatively less than that from 1919–23 to 1929–33, even though

TABLE 5

National Income, Aggregate Payments to Individuals, and Consumers' Outlay, 1929 Prices, 1919–1938

	BILLIONS OF DOLLARS				INDEXES (1919–38 = 100)			
	National income	Agg. pay. to individuals incl. entrep. savings	Agg. pay. to individuals excl. entrep. savings	Consumers' outlay	National income	Agg. pay. to individuals incl. entrep. savings	Agg. pay. to individuals excl. entrep. savings	Consumers' outlay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1919	56.3	56.9	52.7	48.3	80.6	81.2	75.5	75.6
1920	57.7	55.3	54.4	50.1	82.6	79.0	77.9	76.4
1921	56.2	55.0	54.4	53.5	80.5	78.4	78.0	81.3
1922	60.7	59.8	59.9	56.6	86.9	85.4	85.8	86.3
1923	70.5	68.2	67.1	62.5	100.9	97.3	96.1	95.0
1924	71.5	69.6	68.8	66.0	102.3	99.4	98.6	100.6
1925	73.8	71.6	70.1	64.9	105.6	102.2	100.3	98.9
1926	78.9	74.8	72.9	70.2	112.9	106.8	104.4	107.0
1927	79.5	76.8	75.8	71.5	113.8	109.6	108.5	108.9
1928	81.0	78.3	77.4	73.7	115.9	111.8	110.8	112.4
1929	86.9	83.3	82.2	76.9	124.5	118.9	117.8	117.3
1930	79.9	78.4	79.1	75.5	114.3	111.9	113.3	115.1
1931	69.3	72.7	75.3	69.1	99.2	103.8	107.8	105.4
1932	55.7	63.1	67.7	61.2	79.7	90.1	96.9	93.3
1933	56.8	62.3	65.6	61.7	81.3	89.0	93.9	94.1
1934	62.1	67.5	68.0	65.7	88.9	96.3	97.3	100.2
1935	65.6	67.7	67.6	65.2	93.9	96.7	96.8	99.4
1936	75.1	78.1	76.8	69.5	107.5	111.4	109.9	106.0
1937	80.8	81.7	81.3	74.3	115.6	116.6	116.3	113.3
1938	79.0	80.0	79.7	75.7	113.0	114.2	114.1	115.4
Average								
1919–28	68.6	66.6	65.4	61.7	98.2	95.1	93.6	94.0
1929–38	71.1	73.5	74.3	69.5	101.8	104.9	106.4	106.0
1919–38	69.9	70.1	69.8	65.6	100.0	100.0	100.0	100.0
Percentage change 1919–28 to 1929–38	+3.7	+10.3	+13.7	+12.7				

the latter quinquennium is already affected by the great contraction that followed 1929; and the decline from 1926–30 to 1931–35 may be regarded as offsetting the rapid rates of growth from 1919–23 to 1926–30. Third, against the background of the rise over the longer period, the decline during the recent quinquennia takes on the appearance of a small break. These three conclusions would probably hold for consumers' outlay also; but would have to be modified somewhat for national income, in view of its more drastic decline after 1929.

Adjustment for price changes affects also the consistency with which the income totals fluctuate during reference

TABLE 6

Aggregate Payments to Individuals excluding Entrepreneurial Savings, King's and Present NBER Estimates

Selected Periods, 1929 Prices, 1909–1938

	AVERAGE VALUE PER YEAR (*billions of dollars*)		INDEXES (1919–23 = 100)	
	Based on King	Present NBER estimates	Based on King	Present NBER estimates
	(1)	(2)	(3)	(4)
1909–13	52.2		84.8	
1911–15	54.9		89.3	
1914–18	58.3		94.8	
1916–20	58.5		95.1	
1919–23	61.5	57.7	100.0	100.0
1921–25	68.8	64.1	111.7	111.0
1924–28		73.0		126.5
1926–30		77.5		134.2
1929–33		74.0		128.2
1931–35		68.8		119.2
1934–38		74.7		129.3
1909–18			89.8	
1919–28			113.2	
1929–38			128.8	

Entries in col. 1 are based upon King's adjusted estimates. The correction for price changes was carried through with the help of King's index of prices of consumers' goods, the index transferred from the 1913 to the 1929 base on the assumption that no change took place between 1928 (last year for which it is given) and 1929. For further explanations see the note to Table 2.

cycles and the amplitude of fluctuation (see Table 7). In 1929 prices national income still reflects each of the five reference cycles, but the other three totals each fails to respond in at least one of the five reference cycles: aggregate payments including entrepreneurial savings in 1919–21, aggregate payments excluding entrepreneurial savings in 1924–27, and consumers' outlay in 1919–21. The amplitudes of fluctuations during reference cycles are greatly re-

TABLE 7

Changes in Income Totals during Reference Cycles

1929 Prices, 1919–1938

	NATIONAL INCOME	AGGREGATE PAYMENTS TO INDIVIDUALS		CONSUMERS' OUTLAY
		Incl. entrep. savings	Excl. entrep. savings	
	(1)	(2)	(3)	(4)
Cycle 1919–21				
Change, 1919–20	+2.3	−2.8	+3.2	+3.6
Change, 1920–21	−2.5	−0.7	0.0	+6.4
Difference	−4.8	+2.1	−3.2	+2.8
Cycle 1921–24				
Change, 1921–23	+11.0	+10.4	+10.0	+7.6
Change, 1923–24	+1.6	+2.3	+2.8	+6.1
Difference	−9.4	−8.1	−7.2	−1.5
Cycle 1924–27				
Change, 1924–26	+4.8	+3.6	+2.8	+3.1
Change, 1926–27	+0.8	+2.7	+4.0	+1.9
Difference	−4.0	−0.9	+1.2	−1.2
Cycle 1927–32				
Change, 1927–29	+4.8	+4.2	+4.2	+3.8
Change, 1929–32	−13.5	−8.8	−6.3	−7.3
Difference	−18.3	−13.0	−10.5	−11.1
Cycle 1932–38				
Change, 1932–37	+7.4	+5.2	+3.8	+3.9
Change, 1937–38	−2.7	−2.4	−2.1	+2.1
Difference	−10.1	−7.6	−5.9	−1.8
Average for 5 reference cycles				
Change during expansion	+6.1	+4.1	+4.8	+4.4
Change during contraction	−3.3	−1.4	−0.3	+1.8
Difference	−9.3	−5.5	−5.1	−2.6

Based on entries in Table 5; see the notes to Table 3.

duced by the adjustment for price changes: in 1929 prices the averages are from less than one-half to less than one-fourth of those in current prices. It is interesting and significant that the relative reduction in amplitude during reference cycles due to the adjustment for price changes is greatest for consumers' outlay and smallest for national income, and is thus inversely correlated with the amplitude and conformity of fluctuations during reference cycles. The greater the conformity and the amplitude of fluctuations in values in current prices, the less the relative reduction introduced by price changes.

As a result, adjustment for price changes accentuates the differences in fluctuations during reference cycles among the various income totals. During the five reference cycles national income in 1929 prices varies more, on the average and for each cycle, than any of the other three income totals. On the basis of averages but not necessarily for each of the five cycles, this is true of aggregate payments including entrepreneurial savings compared with aggregate payments excluding them; of aggregate payments excluding savings compared with consumers' outlay. The increase in these differences caused by the adjustment for price changes is clear when we compare the average cyclical swings in current and in 1929 prices: in current prices, that in national income is less than twice that in consumers' outlay; in 1929 prices the ratio is almost 4 to 1.

Income per Population Unit

It is the country's population that helps to produce national income, receives payments from enterprises, and consumes the major part of the resulting product. A broad picture of changes in national income, aggregate payments, and consumers' outlay is not complete until these changes are compared with those in the population as a body of producers and consumers.

Table 8 presents measures of population in terms of units

TABLE 8

Total Population in Units relevant to the Production and Consumption of Income, 1919–1938

	TOTALS IN MILLIONS				RATIO OF:		
	Population 1 (1)	Gainfully occupied 2 (2)	Engaged 3 (3)	Consuming units 4 (4)	Col. 2 to col. 1 (5)	Col. 3 to col. 1 (6)	Col. 4 to col. 1 (7)
1919	105.0	41.3	39.8	74.8	39.3	37.9	71.3
1920	106.5	42.3	40.2	75.9	39.7	37.7	71.2
1921	108.2	43.2	36.5	77.2	39.9	33.7	71.4
1922	109.9	43.8	38.0	78.5	39.9	34.6	71.5
1923	111.5	44.7	40.8	80.0	40.1	36.6	71.7
1924	113.2	45.7	40.6	81.4	40.4	35.9	72.0
1925	114.9	46.4	41.3	82.7	40.4	36.0	72.0
1926	116.5	47.2	42.8	84.0	40.5	36.7	72.1
1927	118.2	47.9	42.9	85.2	40.5	36.3	72.1
1928	119.9	48.7	43.2	86.4	40.6	36.0	72.1
1929	121.5	49.4	44.9	87.6	40.7	37.0	72.0
1930	123.1	50.2	42.8	88.7	40.8	34.8	72.0
1931	124.1	50.8	39.4	89.6	41.0	31.7	72.2
1932	125.0	51.4	36.0	90.6	41.1	28.8	72.5
1933	125.8	52.0	36.0	91.5	41.3	28.7	72.7
1934	126.6	52.6	38.5	92.3	41.5	30.4	72.9
1935	127.5	53.2	39.8	93.1	41.7	31.2	73.0
1936	128.4	53.8	41.8	94.0	41.9	32.6	73.2
1937	129.3	54.5	43.8	94.9	42.1	33.9	73.4
1938	130.2	55.1	41.4	95.8	42.4	31.8	73.6
Average							
1919–28	112.4	45.1	40.6	80.6	40.1	36.1	71.7
1929–38	126.2	52.3	40.5	91.8	41.4	32.1	72.8
1919–38	119.3	48.7	40.5	86.2	40.8	34.1	72.2
Percentage change 1919–28 to 1929–38	+12.3	+15.9	−0.4	+13.9	+3.2	−11.1	+1.5

1 Annual midyear estimates prepared by the Bureau of the Census and published in the *Statistical Abstract*.

2 Estimates by Daniel Carson of the National Research Project in *Labor Supply and Employment, Preliminary Statement of Estimates Prepared and Methods Used* (WPA, mimeo., Nov. 1939).

3 See *The National Income and Its Composition* (in press), Tables 51 and 53.

4 The age and sex distributions of the population are those of W. S. Thompson and P. K. Whelpton of the Scripps Foundation, Miami, Ohio. The consuming equivalents are those given in their monograph, *Population Trends in the United States* (McGraw-Hill, 1933), p. 169. The data in this column are not strictly comparable with those in column 1 because the basic total population figures are slightly different.

relevant to the production and consumption of income. Total population (col. 1) is the crudest gauge for the purpose at hand: while it measures the total of individual members of the nation, it includes as equivalent units men and women, in both productive and unproductive years and at ages of both high and low consumption needs. A somewhat better approximation to population as a body of producers is provided by persons gainfully occupied (col. 2), adults who ordinarily engage in economic pursuits, whether or not they are employed during any given period. This measure of the available productive population should be carefully distinguished from another—the number actually employed, in the case of employees, and engaged, in the case of entrepreneurs (col. 3). For employees the total is in equivalent full time units, i.e., after an approximate reduction of the partly employed to the number estimated on the assumption of full employment. It should be emphasized that the number engaged in equivalent full time units allows for partial unemployment only to the extent that it is reflected in the classification of the data, and takes no cognizance of changes in the working time of a fully employed person, such as the secular decline in the length of the working day or reductions during a severe depression that may result from attempts to 'spread' work. Consequently the number engaged is not an accurate measure of man-hours of productive effort, although it is better than the number gainfully occupied. Finally, it is possible to express population in terms of equivalent consuming units, by allowing for differences among various age and sex groups in subsistence needs (col. 4).

It will be seen at a glance that total population, persons gainfully occupied, and the number of consuming units are characterized primarily by sustained long term movements and do not reflect shorter term cyclical fluctuations. All three totals rose steadily, but at a rate that declined perceptibly in the second half of the period. The rate of in-

crease was fairly substantial, the rise from the first to the second decade exceeding 10 per cent. It was significantly higher in both gainfully occupied and the number of consuming units than in total population, reflecting a shift in the age distribution in favor of the adult producing and heavily consuming ages.

Total engaged is the only measure in Table 8 that reflects cyclical changes, declining from 1920 to 1921, 1923 to 1924, 1937 to 1938, and especially severely from 1929 to 1932. This susceptibility to cyclical movements accounts for the slight downward movement over the period revealed by this total.

For comparison with changes in population, income estimates in 1929 prices alone are relevant, since our purpose is to ascertain changes in productivity per employed or available unit of the human factor or in the supply of goods per consuming unit; i.e., in terms of commodities and services, not in monetary units of fluctuating purchasing power.

National income in 1929 prices can be compared with all four population measures (Table 9): since it is a comprehensive gauge of net value product it can be compared not only with the number actually participating in the production process but also with the potential number; and since it may be treated also as a type of maximum fund for current consumption it can be compared with consuming units.

National income per capita, per person gainfully occupied, and per consuming unit declines from the first to the second decade about one-tenth or somewhat less, because the increase in population—total, gainfully occupied, or converted to consuming units—was, over the period, appreciably greater than in total national income in 1929 prices. While this decline from the first to the second decade in the per unit figures was due to the severe depression of 1929–32, it is noteworthy that in 1937, the last peak year of cyclical expansion, national income per capita was still about 13 per cent below that in the preceding year of cyclical peak

(1929) : that national income per person gainfully occupied in 1937 was still 16 per cent below that in 1929: and that national income per consuming unit in 1937 was still 14 per cent below that of 1929. If we compare these figures with the secular rise that would ordinarily be expected in the real national product per population unit, we see the substantial degree to which by 1937 the recovery from the 1929–32 depression was still incomplete.

The pattern traced by national income per equivalent full time unit engaged was significantly different. It rose 3.9 per

TABLE 9

National Income per Population Unit. 1929 Prices. 1919–1938

	INCOME IN DOLLARS PER			
	Capita	Gainfully occupied	Engaged	Consuming unit
	(1)	(2)	(3)	(4)
1919	536	1,364	1,415	753
1920	541	1,363	1,434	760
1921	520	1,302	1,539	728
1922	552	1,385	1,595	772
1923	632	1,577	1,726	881
1924	631	1,565	1,759	878
1925	642	1,589	1,785	892
1926	677	1,672	1,844	939
1927	673	1,659	1,853	933
1928	676	1,663	1,877	937
1929	715	1,759	1,936	993
1930	649	1,590	1,867	901
1931	558	1,363	1,758	773
1932	446	1,084	1,547	615
1933	451	1,093	1,575	621
1934	491	1,182	1,612	673
1935	515	1,233	1,648	705
1936	585	1,395	1,795	799
1937	625	1,483	1,844	851
1938	606	1,432	1,907	824
Average				
1919–28	608	1,514	1,683	847
1929–38	564	1,361	1,749	776
1919–38	586	1,438	1,716	811
Percentage change				
1919-28 to 1929–38	—7.2	—10.1	+3.9	—8.4

cent from the first to the second decade. While this rise was in contrast to the substantial decline over the period in national income per capita, per person gainfully occupied, and per consuming unit, the annual figures in column 3 show that even on a per person engaged basis the entry for the recent highest year, 1938, was about 1.5 per cent below that for 1929. The increase over the period in the decennial averages is thus due exclusively to the rise from the first to the second half of the 1920's.

The behavior of national income per person engaged during reference cycles deserves attention. Income per capita, per person gainfully occupied, and per consuming unit fluctuated in close conformity with business cycles: per capita income declined significantly from 1920 to 1921, 1929 to 1932, and 1937 to 1938, and very slightly from 1923 to 1924 and 1926 to 1927; and rose during each reference expansion. Income per person gainfully occupied and per consuming unit display equally marked conformity to business cycles. But income per person engaged declined only from 1929 to 1932; and rose substantially in other contractions, in some at a rate greater than the annual rise in the preceding expansion. These movements are plausible. During cyclical contractions the labor force is reduced by the elimination of the less efficient, and capital per worker employed is increased, leading to a rise in the net product (in constant prices) per unit of work. While, as already indicated, our figures on equivalent full time units engaged do not reflect faithfully variations in the units of work (such as man-hours), their failure to take cognizance of changes in the number of hours in a full time month and of some types of partial unemployment is not, during brief cyclical contractions, sufficiently great to offset the rise in the product per unit of work; hence the rise in column 3 during the brief cyclical contractions of 1920–21, 1923–24, 1926–27, and 1937–38. But during the severe and prolonged depression of 1929–32 the reduction in the hours of full time

workers and increase in partial unemployment not reflected in our figures more than offset the increase that may have occurred in real product per unit of work, causing national income per person engaged [8] to decline.

It did not seem necessary to show annual figures on per unit aggregate payments or consumers' outlay: these can easily be derived from Tables 5 and 8, and they tend to duplicate the evidence of Table 9, differing from national income in pattern, as already noted in the discussion of

[8] It is also possible that in a severe cyclical contraction real product per work unit declines. This may occur if business enterprises keep employees on largely in order to maintain a skeleton force, the hours of work being partly devoted to tasks whose current net value (disregarding price changes) is appreciably lower than that of tasks to which the hours would have been devoted under conditions of fuller employment.

TABLE 10

Aggregate Payments and Consumers' Outlay per Population Unit, 1929 Prices

	AVERAGES (DOLLARS)			% CHANGE 1919–28 TO	VALUES (DOLLARS) AT RECENT PEAKS		% CHANGE COL. 6 TO
	1919–38	1919–28	1929–38	1919–38	Latest peak	Peak before latest, 1929	COL. 5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Aggregate payments incl. entrepreneurial savings per							
Capita	587	591	585	—1.4	632 (1937)	685	—7.7
Gainfully occupied	1,438	1,471	1,406	—4.4	1,500 (1937)	1,685	—11.0
Engaged	1,724	1,635	1,813	+10.9	1,932 (1938)	1,854	+4.2
Consuming unit	812	823	801	—2.7	861 (1937)	951	—9.5
Aggregate payments excl. entrepreneurial savings per							
Capita	584	579	590	+1.9	629 (1937)	677	—7.1
Gainfully occupied	1,432	1,442	1,423	—1.3	1,492 (1937)	1,664	—10.5
Engaged	1,720	1,604	1,837	+14.5	1,925 (1938)	1,851	+5.1
Consuming unit	809	807	810	+0.4	857 (1937)	939	—8.7
Consumers' outlay per							
Capita	549	547	551	+0.7	582 (1938)	635	—8.1
Consuming unit	760	762	758	—0.5	790 (1938)	879	—10.1

Table 5. We therefore confined Table 10 to summary measures of changes in per unit aggregate payments and consumers' outlay: consumers' outlay is compared solely with total population and consuming units, since little meaning is to be attached to consumers' outlay per person gainfully occupied or engaged.

The changes from the first to the second decade show differences among the various per unit figures similar to those in national income. Aggregate payments including entrepreneurial savings per capita, per person gainfully occupied, and per consuming unit decline, on the whole, slightly; per capita aggregate payments excluding entrepreneurial savings rise a little, and aggregate payments per person engaged rise substantially. All these measures of rise and decline over the period are algebraically larger than the corresponding measures for national income, reflecting, of course, the greater rise in each of these totals over the period than in national income. Comparison for the reference peak years shows that during the last decade the decline per capita, per person gainfully occupied, and per consuming unit was much greater and the rise per person engaged much less than from the first to the second decade (col. 5-7). Aggregate payments or consumers' outlay per capita in 1937 or 1938 were about 8 per cent lower than in 1929; aggregate payments per person gainfully occupied in 1937, about 11 per cent lower; and aggregate payments and consumers' outlay per consuming unit in 1937 or 1938, from 9 to 10 per cent lower. Aggregate payments per person engaged were about 5 per cent higher in 1938 (the last peak year) than in 1929. The failure of the other three totals to regain the per unit levels reached during 1929 confirms the evidence of national income that by 1937–38 the recovery from the 1929–32 depression was substantially incomplete.

In conclusion, with the aid of Dr. King's estimates we trace the movement of aggregate payments excluding entrepreneurial savings per capita and per person gainfully occu-

pied since 1909 (Table 11). While there is a secular rise, it is quite moderate. In the comparison by decades the rise in aggregate payments per capita during twenty years is about 11 per cent, and per person gainfully occupied only about 7 per cent. One would be inclined to infer that for national income the per capita and per person gainfully occupied averages would not rise significantly over the period as a whole, if at all. Much as this result may be affected by the severity of the recent depression, it does suggest that any secular rise in the real net product per capita or per person gainfully occupied could not have been appreciable during the period under review.

Moreover, the rise in the per unit figures is concentrated between 1919–23 and 1924–28, more specifically between 1921 and 1929. Before 1921 there was little significant rise in the real value of aggregate payments per capita and per person gainfully occupied, and one is inclined to infer that the same must have been true of national income and of consumers' outlay. Because the rise occurs only during the cyclical expansion of the 1920's one is all the more justified in discounting the effect of the recent severe depression on the trends over the period as a whole. In other words, there is more reason to attribute some secular significance to the small rise in the per unit figures of aggregate payments and to the inferentially probable stability of national income per capita or per person gainfully occupied.

Summary

a) Over the twenty years 1919–38 national income in current prices averaged $66.6 billion per year; both totals of aggregate payments to individuals only slightly less; and consumers' outlay, $61.7 billion. When adjusted for price changes and expressed in 1929 prices, the annual averages of national income and of aggregate payments amounted roughly to $70 billion, and of consumers' outlay, to $65.6 billion.

TABLE 11

Aggregate Payments to Individuals excluding Entrepreneurial Savings, per Capita and per Gainfully Occupied King's and Present NBER Estimates Selected Periods, 1929 Prices, 1909–1938

	PER CAPITA		PER GAINFULLY OCCUPIED	
	Based on King	Present NBER estimates	Based on King	Present NBER estimates
	(1)	(2)	(3)	(4)
	DOLLARS			
1909–13	556		1,463	
1911–15	566		1,487	
1914–18	573		1,503	
1916–20	562		1,474	
1919–23	568	533	1,502	1,339
1921–25	615	574	1,625	1,429
1924–28		626		1,546
1926–30		647		1,591
1929–33		598		1,460
1931–35		547		1,325
1934–38		581		1,385
	INDEXES (1919–23 = 100)			
1909–13	97.9		97.4	
1911–15	99.6		99.0	
1914–18	100.9		100.1	
1916–20	98.9		98.1	
1919–23	100.0	100.0	100.0	100.0
1921–25	108.3	107.7	108.2	106.7
1924–28		117.4		115.5
1926–30		121.4		118.8
1929–33		112.2		109.0
1931–35		102.6		99.0
1934–38		109.0		103.4
1909–18	99.3		98.7	
1919–28	108.7		107.7	
1929–38	110.6		106.2	

The estimates of population and of gainfully occupied used to derive the per unit figures based on King's data are those prepared by Dr. King and published in his *National Income and Its Purchasing Power* (Table I, p. 47). For derivation of the income totals based on King's data, see the notes to Tables 2 and 6.

b) All income totals in current prices declined over the two decades. But study of one total since 1909 suggests a substantial rise over the thirty years in all the totals, even when expressed in current prices.

c) The decline from 1919–29 to 1929–38 in the totals in current prices is due exclusively to the downward tilt of the price levels. When adjusted for price changes, the income totals rise from the first to the second decade. The rise in national income is quite moderate (4 per cent); that in aggregate payments and consumers' outlay, substantial (over 10 per cent). But for all totals the rise is concentrated in the decade of the 1920's; and in the most recent peak year, 1937 (1938, for consumers' outlay), no total has regained the 1929 level, even though adjustment is made for the decline in prices since 1929.

d) Population, the number of persons gainfully occupied and of consuming units grew from the first to the second decade at a rate appreciably greater than national income (in 1929 prices); the number of equivalent full time units employed declined slightly. As a result, national income per capita, per person gainfully occupied, and per consuming unit declined over the period; national income per unit employed rose. The other totals (in 1929 prices) per capita, per person gainfully occupied, per unit employed, and per consuming unit described similar patterns, except that the declines were less appreciable and the rises more pronounced than in national income per unit.

e) Over the thirty years 1909–38 aggregate payments excluding entrepreneurial savings in 1929 prices rose substantially. But since population and the number of gainfully occupied also grew rapidly, aggregate payments per capita and per person gainfully occupied rose only moderately (about 11 and 7 per cent respectively). National income per capita or per person gainfully occupied must have risen even less, if at all.

f) All totals in current prices fluctuate in close con-

formity with reference cycles. The amplitude is greatest in national income; greater in aggregate payments including entrepreneurial savings than in aggregate payments excluding them; and greater in either total of aggregate payments than in consumers' outlay.

g) Adjustment for price changes sharply reduces amplitudes during reference cycles. But in 1929 prices all totals still reflect reference cycles, and the difference between national income and the other three totals in amplitude is even greater for the totals in 1929 prices than in current prices.

h) Population, the number of gainfully occupied and of consuming units show no large changes associated with business cycles; hence, movements in the income totals divided by these units and in the undivided totals are quite similar during reference cycles. But the number of equivalent full time engaged rises during reference expansions and declines during reference contractions. National income and aggregate payments in 1929 prices, when calculated on a per person engaged basis, rise during four reference contractions and decline only from 1929 to 1932. These movements during contractions suggest rises in real product per worker due to greater efficiency and an increase in capital per worker. That such a rise did not occur from 1929 to 1932 may be due partly to the failure of the number engaged to reflect fully reduction in hours and certain forms of partial unemployment and partly to a genuine decline in real product per man-hour employed that may result from attempts to maintain a minimum labor force in the face of a drastic curtailment of output.