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## CHAPTER 7

### Distribution by Type of Final Product

CHAPTERS 5 and 6 deal with the origin of national income in the country's industrial system and the distribution of the monetary counterpart among types of income and payment. We now consider the various categories of final goods turned out and ascertain how national income, originating in various industries and distributed in various types of payment or accruals, is utilized.

By final goods we mean commodities and services in the form in which, without further modification or movement, they are used by ultimate consumers in households or by consumers of durable equipment in business and other economic enterprises. They include fully finished consumer goods reaching ultimate consumers, fully finished construction of all types, and durable capital equipment reaching the economic enterprises that use it in the production process. The gross value of fully finished consumer goods reaching households during the year is consumers' outlay, an item already measured and discussed in Chapter 4. The values of construction and durable equipment are net, i.e., the remainder left after an allowance has been made for the construction and equipment consumed during the year, and constitute the major part of net capital formation. But the gross value of finished consumer goods reaching ultimate consumers and the net value of construction and durable equipment reaching the economic enterprises that use them do not exhaust the

full contents of national income. Unfinished commodities may be produced in excess of their consumption, making net additions to inventories in the hands of economic enterprises. And more goods may be transferred from domestic consumers to foreign countries than are received by domestic consumers from foreign countries, making net additions to claims against foreign countries. Hence, net capital formation includes net changes in inventories of all economic enterprises (but not of households) and net changes in claims against foreign countries as well as the net value of construction and producers' durable equipment. National income is by definition equal to the sum of consumers' outlay and net capital formation.

It is theoretically possible to subdivide both consumers' outlay and net capital formation into various categories. In consumers' outlay commodities could be separated from services; various groups of either according to their place in consumers' scales of wants, the characteristics of demand for them, the distinctive features of the goods themselves such as durability, divisibility into small units, and mobility. For net capital formation under each of the four categories—construction, durable equipment, inventories, and claims against foreign countries—numerous subdivisions could be introduced separating more specific commodity groups, the various industries or countries to whose stock of goods capital formation adds, and the like. But such detailed analysis is barred by limitations of data, and the few divisions by type of final product in this chapter are the only ones possible with the combination of data and analysis utilized in the National Bureau's studies of national income and capital formation.

Unlike the distributions by industrial origin and type of income, the distribution by type of final product must use the results of both studies. Since the errors of estimate in the two studies are not likely to be in the same direction and, more important, cannot be appraised as accurately as errors attaching to estimates all made within the framework of one study, this chapter is subject to more severe qualification than the

preceding. Yet within these limitations, from the combined results of the two studies we can observe what shares net capital formation and its various components constitute of national income and how these shares change over time; how net capital formation is apportioned to various accounts; how consumers' outlay is distributed among various groups of goods; and finally, how national income itself is apportioned among various types of final product.

### *1 Capital Formation by Type of Product*

Net capital formation as part of national income is discussed implicitly in Chapter 4, in the comparison of national income and consumers' outlay. In Table 37 we make a direct comparison, which reveals the level of net capital formation and its temporal fluctuations. The first impression conveyed by Table 37 is the smallness of the share of net capital formation in national income: in current and 1929 prices it accounts on the average for approximately 6 per cent. Thus for the period as a whole, real savings, i.e., savings that found embodiment in additions to the stock of equipment and commodities or to claims against foreign countries, amounted to appreciably less than one-tenth of national income. The year by year comparison of totals adjusted for price changes and thus relatively free from the distorting effects of fluctuating price levels indicates that net capital formation has not exceeded 15 per cent of national income.

<sup>1</sup> Capital formation is measured here on a *net* basis, after an allowance for depreciation, depletion, and regularly accountable obsolescence of capital equipment and construction. So far as new capital goods, whose value is offset by deductions for current consumption, may represent additions to productive power greater than the losses such deductions measure, even complete absence of net capital formation may mean a greater rather than constant productive power of durable capital. If it does, addition to the productive power of capital goods may be composed of two parts: (a) excess efficiency of new capital goods whose value is offset by the allowance for depreciation, etc.; (b) total efficiency of new capital goods, whose value constitutes net capital formation as here measured. It is exceedingly difficult to approximate the relative magnitudes of items (a) and (b), but it is likely that our estimates of net capital formation

TABLE 37

National Income and Capital Formation  
Current and 1929 Prices, 1919-1938

	CURRENT PRICES			1929 PRICES		
	National income <sup>1</sup> (billions of dollars)	Capital formation (billions of dollars)	Capital formation as % of national income	National income <sup>1</sup> (billions of dollars)	Capital formation (billions of dollars)	Capital formation as % of national income
	(1)	(2)	(3)	(4)	(5)	(6)
1919	64.2	10.3	16.0	57.0	8.1	14.1
1920	74.2	11.4	15.3	58.4	7.5	12.9
1921	59.4	3.3	5.5	56.5	2.9	5.1
1922	60.7	4.5	7.4	60.8	4.0	6.6
1923	71.6	8.6	12.0	70.7	8.2	11.5
1924	72.1	5.9	8.1	71.7	5.5	7.7
1925	76.0	9.3	12.2	73.9	8.9	12.0
1926	81.6	9.2	11.3	79.0	8.7	11.0
1927	80.1	8.2	10.2	79.6	8.0	10.1
1928	81.7	7.4	9.0	81.1	7.3	8.9
1929	87.2	10.0	11.5	87.1	10.0	11.5
1930	77.3	4.2	5.4	79.9	4.4	5.5
1931	60.3	0.1	0.2	69.3	0.2	0.2
1932	42.9	-4.2	-9.7	55.6	-5.5	-9.9
1933	42.2	-3.6	-8.6	56.7	-5.0	-8.8
1934	49.5	-2.6	-5.2	62.1	-3.6	-5.8
1935	54.4	0.7	1.3	65.6	0.4	0.6
1936	62.9	5.4	8.5	75.0	5.6	7.4
1937	70.5	6.4	9.0	80.8	6.4	7.9
1938	65.5	2.9	4.4	79.0	3.2	4.1
<i>Average</i> <sup>2</sup>						
1919-23	66.0	7.6	11.2	60.7	6.1	10.0
1924-28	78.3	8.0	10.2	77.1	7.7	9.9
1929-33	62.0	1.3	-0.2	69.7	0.8	-0.3
1934-38	60.6	2.5	3.6	72.5	2.4	2.8
1919-28	72.2	7.8	10.7	68.9	6.9	10.0
1929-38	61.3	1.9	1.7	71.1	1.6	1.3

<sup>1</sup> As in Chapter 4, but not as in Chapters 5 and 6, national income in this and other tables includes the Social Security contributions of employers and is adjusted for the effects on net savings of corporations and other business firms of gains and losses on sales of capital assets, of inventory revaluations, and of the use of a cost rather than a reproduction basis for depreciation charges. These adjustments are indispensable in establishing the comparability of national income and capital formation totals.

<sup>2</sup> As in all measures of change in percentage shares, we use here arithmetic means of percentages rather than percentages based on arithmetic means of totals. The alternative set of percentages (which can easily be computed from entries in col. 1 and 2, 4 and 5), would show movements in the same direction but more moderate from period to period.

Over the period as a whole the share of net capital formation in national income declines significantly. The decline, to be sure, is caused largely by the severe contraction of 1929-32, but even in the latest peak year, 1937, the share is smaller than in the 1920's. Subsequent analysis reveals the importance of construction, which is susceptible to pronounced cycles well over ten years in duration, in net capital formation. For these reasons, one cannot attribute much secular significance to estimated changes in the share of net capital formation in national income for a period as short as two decades.

Both national income and net capital formation conform closely to business cycles, but the fluctuations in capital formation are greater than in national income. In each of the five business cycles the share of net capital formation in national income falls markedly during contractions, and the amplitude of the swing is wide indeed. The timing of the cyclical fluctuations in net capital formation diverges once or twice from the chronology of cycles in general business conditions: for example, net capital formation (in 1929 prices) fails to rise from 1919 to 1920, reaches a peak in 1925 and a trough in 1928 rather than in 1926 and 1927 respectively. But these departures from reference cycle chronology, due primarily to the influence of construction which is subject to cycles of its own, are minor, and the violent fluctuations in net capital formation and in its share in national income increase the sensitivity of national income to cyclical swings.

There is a highly variable relation between changes in net capital formation and in national income. Indeed, in several years an increase in net capital formation is accompanied by a decrease in national income, or vice versa (1924, 1926, 1928, 1933, and others). While some of these divergences may be

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undervalue relative additions to the productive power of the country's stock of capital. However, there is no reason to assume that the changes over time in items (a) and (b) are inversely related. If they are not, then rises and declines in new capital formation, as here estimated in 1929 prices, would indicate rises and declines in the rate of addition to the productive power of the stock of capital goods in the country.

due to crudities of the estimates, they are indicative of the looseness of correlation between changes in capital formation and in national income. The impression is the same when we compare only upward changes; for example, from 1921 to 1922 capital formation in current prices increased \$1.2 billion, national income, \$1.3 billion; from 1922 to 1923 the former increased \$4.1 billion, the latter, \$10.9 billion. Thus the ratio of the increase in national income to the increase in net capital formation was only 1.1 in 1921-22, and 2.7 in 1922-23. There are similar variations in the ratio in other years, which remain even if we compare changes in gross capital formation with changes in gross national income, i.e., include in both the allowance for consumption of capital goods, or if we omit certain items, such as changes in claims against foreign countries, from both capital formation and national income. The estimates in Table 37 fail to support an assumption of constancy in the ratio of *changes* in capital formation to *changes* in national income (or of capital formation to national income), in either the rising or declining phases of business cycles, a constancy that seems to be implicit in most discussions of 'the multiplier'.

Estimates of net capital formation enable us to separate: (a) net value of producers' durable equipment combined with the net value of business construction; (b) net value of residential construction; (c) net value of public construction, i.e., all construction done by and for the account of governmental agencies; (d) net changes in business inventories (excluding inventories of households and, for lack of data, inventories in the hands of non-business economic enterprises); (e) changes in claims against foreign countries. In Table 38 we can observe the shares formed by these various components of net capital formation in national income. The comparison is confined to estimates in 1929 prices, in order to reveal the movement of shares in real product; but if the estimates were computed in current prices the results would be roughly similar.

The most striking feature for the period as a whole is the large share of public construction and the small share of residential construction. Ranked in order of relative importance of the average share for the period are public construction, producers' durable goods and business construction, net flow to inventories, changes in claims against foreign countries, and residential construction. The ranking would be entirely

TABLE 38

Percentage Shares of Type of Product Components  
of Capital Formation in National Income  
1929 Prices, 1919-1938

	PRODUCERS' DURABLE INCL. BUSINESS CONSTRUCTION	CONSTRUCTION Residential	Public	CHANGE IN BUSINESS INVENTORIES	CHANGE IN CLAIMS AGAINST FOREIGN COUNTRIES
	(1)	(2)	(3)	(4)	(5)
1919	3.0	-0.4	2.8	4.9	3.7
1920	3.2	-1.1	1.0	7.2	2.5
1921	0.7	0.04	2.1	-0.1	2.3
1922	1.3	2.1	2.0	0.5	0.7
1923	3.3	2.5	1.4	4.0	0.3
1924	3.2	3.2	1.7	-1.3	0.9
1925	3.9	3.6	2.0	2.2	0.4
1926	4.3	3.2	1.8	1.5	0.1
1927	4.2	2.7	2.1	0.5	0.6
1928	4.2	2.2	2.2	-0.5	0.8
1929	4.9	1.3	2.1	2.8	0.5
1930	3.3	-0.1	2.8	-1.3	0.9
1931	-0.3	-1.0	3.2	-1.9	0.4
1932	-4.3	-2.8	2.8	-5.7	0.1
1933	-4.4	-3.1	1.5	-3.0	0.3
1934	-2.1	-3.2	2.3	-3.6	0.7
1935	-0.6	-2.4	1.9	2.0	-0.3
1936	1.9	-1.2	3.3	3.8	-0.5
1937	3.2	-0.7	2.4	3.2	-0.1
1938	0.7	-0.8	3.3	-0.4	1.3
<i>Average</i>					
1919-23	2.3	0.6	1.9	3.3	1.9
1924-28	4.0	3.0	2.0	0.5	0.6
1929-33	-0.2	-1.1	2.5	-1.8	0.4
1934-38	0.6	-1.7	2.6	1.0	0.2
1919-28	3.1	1.8	1.9	1.9	1.2
1929-38	0.2	-1.4	2.6	-0.4	0.3

See notes to Table 37.



different were components of gross capital formation compared, and it would be more trustworthy than that based upon Table 38, since the estimates of net values of residential and public construction are subject to especially wide errors because of conceptual and statistical difficulties in establishing the annual consumption of already existing construction. Also, the higher average share of *net* public construction is accounted for largely by its rise during the depressed decade of the 1930's. Nevertheless, the conclusion contains an undeniable kernel of significance: public construction had considerable weight in net capital formation during the last two decades while net residential construction was of relatively small weight.

The share of each component, except public construction, declined significantly from the first to the second decade. The quinquennial averages, and especially the annual figures (with due allowance for cyclical fluctuations), indicate that the movement of the shares of at least three components over the period is sufficiently consistent to claim secular significance. The rise in the share of public construction in both national income and capital formation is consistently suggested by the quinquennial averages, and there are many indications that, like the rise in the share of government in national income, it is in the nature of a secular tendency. Similarly, the share in national income of net flow to inventories declined fairly consistently, while the share of changes in claims against foreign countries did not regain the levels of 1919-20. In the shares of both inventories and claims against foreign countries the downward tilt is accentuated by the high levels attained immediately after the first World War. It is possible that this downward movement is a declining phase of a long cycle in inventory holdings (associated with a downward sweep of the price level) and in foreign trade (associated with a passing of the exceptional position of the United States in 1919-21 as the only large exporter in a weary and exhausted world).

The components of capital formation differ significantly in the degree to which their shares in national income reflect

cyclical fluctuations. The component whose share conforms perfectly to business cycles and whose amplitudes are widest is the net flow to business inventories. Its share rises during every expansion and declines during every contraction, the differential movement ranging well above 5 per cent of national income. Another component whose share moves in perfect conformity to business cycles is producers' durable goods plus business construction; and its fluctuations would be greater could we confine it to producers' durable equipment excluding business construction. For various reasons, the shares of the other three components conform much less closely and have narrower amplitudes; residential construction because of a pronounced cycle of its own, with a trough in 1920, a peak in 1925, and the next trough in 1934; public construction because of its lack of susceptibility to transient changes in general business conditions, not to mention its use as a counterbalance to severe depressions; and changes in claims against foreign countries because of their dependence upon business conditions, not only in the United States but also in other countries whose business cycles do not necessarily coincide with American.

In the light of Table 38 some of the conclusions derived from Table 37 concerning the behavior of the share of net capital formation in national income may be reinterpreted. The decline over the period is due solely to the decline in the shares of capital formation of private types, notably residential construction, net flow to inventories, and producers' durable equipment including business construction. The marked conformity of fluctuations in the share of capital formation to business cycles and their wide amplitude are due largely to two components: net flow to inventories and the net flow of producers' durable equipment plus business construction.

### *2 Capital Formation by Various Savings Accounts*

So far we have compared capital formation with national income as congeries of final products or forms of the disposition

of real product. We now attempt to study capital formation as the investment of a share of the monetary equivalent of national income, i.e., part of the total flow of various types of payment and income distinguished in Chapter 6. Viewed in this way net capital formation and its share in national income remain, of course, as they appeared in Table 37, but the divisions of net capital formation are different from those in Table 38. Instead of forming *material* or *channel of utilization* categories, we now set up divisions according to the type of income that became embodied in capital formation, i.e., according to the groups to whose savings we should attribute various parts of capital formation—corporations, governments, and unincorporated business firms.

Since savings of enterprises were so estimated as to exclude items that do not represent a flow to or from the stock of capital goods as estimated in capital formation (i.e., gains and losses from sales of capital assets, book gains and losses due to revaluation of inventories, gains and losses due to the difference between cost and reproduction bases of depreciation charges), we can interpret them as parts of the current national product that became embodied in current capital formation. If corporate savings are positive, as they were in 1919 to the extent of \$1.0 billion, we may say that of the national product, \$1.0 billion of current corporate net income became embodied in net capital formation; and that the rest of net capital formation represents net savings of governments, of unincorporated firms, or of individuals. Negative corporate savings may likewise be interpreted as indicating that not only did current income contribute nothing to net capital formation but actually that a net draft was made upon the existing stock of durable goods.

By using our estimates of net savings and of net capital formation we can apportion net capital formation among various accounts, i.e., among the groups whose savings became embodied in additions to the stock of capital goods in the country or to claims against foreign countries (Table 39). By

TABLE 39

Capital Formation by Type of Savings, Current Prices  
1919-1938 (billions of dollars)

	CAPITAL FORMATION	SAVINGS OF					
		Corp.	Gov.	Corp. & gov. (2 + 3)	Indiv. & entrep. (6 + 7)	Entre- preneurs (6)	Individ- uals (7)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1919	10.3	1.0	-1.3	-0.3	10.6	5.5	5.1
1920	11.4	2.2	1.9	4.1	7.2	1.6	5.6
1921	3.3	0.7	1.0	1.7	1.6	0.6	1.0
1922	4.5	0.2	0.9	1.1	3.4	-0.1	3.5
1923	8.6	1.0	1.6	2.6	6.0	1.2	4.9
1924	5.9	0.4	1.7	2.1	3.7	0.9	2.9
1925	9.3	0.8	1.6	2.4	6.8	1.6	5.2
1926	9.2	2.3	2.2	4.4	4.8	2.1	2.7
1927	8.2	0.6	2.3	2.9	5.3	1.1	4.2
1928	7.4	0.9	1.9	2.8	4.6	0.9	3.6
1929	10.0	1.5	2.2	3.8	6.3	1.1	5.2
1930	4.2	-0.7	2.1	1.4	2.8	-0.6	3.4
1931	0.1	-3.1	0.3	-2.7	2.8	-2.0	4.9
1932	-4.2	-4.8	-0.9	-5.7	1.5	-3.5	5.0
1933	-3.6	-4.0	-0.1	-4.1	0.5	-2.4	2.9
1934	-2.6	-3.3	-0.6	-3.9	-1.3	-0.4	1.6
1935	0.7	-2.1	-1.7	-3.8	4.6	0.2	4.3
1936	5.4	-0.7	-2.2	-2.9	8.3	1.2	7.0
1937	6.4	-1.4	0.5	-0.9	7.3	0.4	6.8
1938	2.9	-0.7	-0.2	-0.9	3.7	0.3	3.5
<i>Average</i>							
1919-23	7.6	1.0	0.8	1.8	5.8	1.7	4.0
1924-28	8.0	1.0	1.9	2.9	5.0	1.3	3.7
1929-33	1.3	-2.2	0.7	-1.5	2.8	-1.5	4.3
1934-38	2.5	-1.6	-0.8	-2.5	5.0	0.4	4.7
1919-28	7.8	1.0	1.4	2.4	5.4	1.5	3.9
1929-38	1.9	-1.9	-0.05	-2.0	3.9	-0.6	4.5

subtracting corporate savings from net capital formation we obtain the savings by governments, entrepreneurs, and individuals that became embodied in capital formation. By subtracting savings of governments and entrepreneurs from the remainder we obtain the savings of individuals entering net capital formation.

Several qualifications must be stressed in order to avoid misinterpretation of the distributions in Tables 39 and 40. The first and most obvious is that the estimates are subject to fairly

wide margins of error. The second is that corporate, government, entrepreneurial, and individuals' savings that became embodied in capital formation should not be confused with the amounts that accrued to the stock of capital goods at the disposal of these various groups. A corporation may have sustained negative savings but the stock of real capital goods at its disposal may have increased by purchases with borrowed funds; and the same is true of governments, unincorporated firms, and individuals. On the other hand, a corporation may have enjoyed positive net savings without itself using the surplus to finance additions to its capital goods. Such savings may have been used by other enterprises to finance capital investment through direct or indirect loans or investments made by the saver corporation. Third, net savings of economic enterprises (corporate and unincorporated firms, governments) are defined here to exclude several items usually included under such savings, and to that extent differ from what the enterprises themselves consider their net savings to be. Finally, and most important, individuals' savings embodied in net capital formation are significantly different from what individuals conceive their savings to be and from savings as usually measured in estimates under that label. The estimates in Table 39 exclude all capital gains and losses, i.e., gains and losses on sales of capital assets. They are the remainder after the amounts allocated as depreciation charges (over and above regular maintenance charges) against residential and other property owned by individuals have been subtracted, an adjustment not usually made in estimates of individuals' savings. They include amounts accruing to individuals as depositors in savings banks and other savings institutions and as holders of policies in life insurance companies, whether or not these amounts have been distributed to the depositors or policyholders; but exclude insurance benefit payments. They exclude amounts individuals may consider savings but that have failed to find expression in capital formation, either because they were appropriated by the transmitting agencies or be-

cause some delay may have occurred in their being used to finance additions to the stock of capital goods or to claims against foreign countries.

But while the estimates in Table 39 differ significantly from what enterprises and individuals conceive their savings to be; while they cannot be used to gauge the propensity of enterprises and individuals to save, they do reflect approximately the shares of net capital formation, i.e., of real investment financed from the current income of different groups of enterprises and individuals. In that sense they measure the contribution of various types of savings from current income to additions to the stock of the nation's capital goods.

Because net capital formation totals themselves, and still more frequently some of the components in Table 39, are often negative, we cannot establish annual percentage distributions of capital formation among components financed by savings of various types. But from the decennial averages we can gain some idea of the relative importance of various categories. In the decade 1919-28, when capital formation was at a relatively high level, corporate net savings accounted for only one-eighth of it; and if savings of unincorporated firms were added, the share of all business savings would rise to somewhat less than one-third of the total. Net savings of governments accounted for somewhat over one-sixth; while the share of individuals' savings was the largest, amounting to one-half of net capital formation. In the next decade, when savings of enterprises were negative and average net capital formation was positive, individuals' savings were the sole source of financing capital formation.<sup>2</sup>

The same decennial averages, supplemented by quinquennial averages, reveal the marked contrast in movement over

<sup>2</sup> Although our estimates of savings of unincorporated firms are subject to a wide margin of error (see Ch. 12), we use them to separate this type of savings from individuals' savings embodied in capital formation. The total of savings of individuals and unincorporated firms combined (Table 39, col. 5), derived by subtracting from total net capital formation the savings of corporations and governments, is more reliable than that of either component.

the period between the shares of net capital formation attributable to individuals' savings and to savings of enterprises. Savings of corporate and unincorporated firms, and even of governments, decline markedly from the first to the second decade; and the average for the last quinquennium, 1934-38, is decidedly lower in all three series than for the first or second. No such decline occurs in capital formation attributable to individuals' savings, the average for 1929-38 being slightly higher than that for 1919-28, and the average for the last quinquennium, highest. The decline in net savings of enterprises needs no detailed comment. We note merely that with respect to them government has no advantage over private enterprise: changes in business conditions that affect private incorporated and unincorporated firms also affect tax and other revenue receipts of governments and hence their net savings. The absence of decline in individuals' savings embodied in capital formation is unexpected, but we postpone its discussion for a moment.

It is not surprising that savings of incorporated and of unincorporated firms fluctuate in close conformity to business cycles: they reflect clearly cyclical expansions (except that from 1919 to 1920 in entrepreneurial savings) and contractions (except that from 1937 to 1938 in corporate savings). And since government savings depend upon receipts that are largely determined by business conditions, we would expect them to reflect at least the more pronounced business cycles. Despite the wide margin of error and regardless of the movement in individuals' savings shown by the more customary indexes, individuals' savings embodied in capital formation also conform closely to fluctuations in general business conditions: the entries in column 7 reflect clearly the expansions of 1919-20, 1921-23, 1924-26, 1927-29, and 1932-37, although in the third and last the timing is somewhat different. Every contraction stands out.

We now turn to the intriguing question raised by the movement of the share of capital formation attributable to individu-

als' savings. As said, this share did not decline over the period and was highest in the last quinquennium, 1934-38. When we compare individuals' savings embodied in net capital formation with aggregate payments to individuals (Table 40, col. 1-4), both including savings of unincorporated firms, the results are not unlike those of the business savings series in Table 39: total savings and their share in aggregate payments decline over the period, and the average for the last quinquennium is lower than that for 1919-23. The percentage shares in columns 2 and 4 have a slightly higher average level than the percentages of net capital formation in national income in Table 37, ranging about 6.5 per cent. Even in this comparison the ratio of savings to aggregate payments in 1936 and 1937 was close to the peak (1919) and higher than during the 1920's.

The second comparison in Table 40 (col. 5-8), of savings of individuals, but not of unincorporated firms, embodied in net capital formation, with aggregate payments to individuals excluding entrepreneurial savings is more striking. As already indicated in Table 39, such savings in current prices rise slightly from the first to the second decade. As a percentage of aggregate payments, their share increases from the first to the second decade and is highest in the last quinquennium. When adjusted for price changes, they are considerably larger in the second than in the first decade, and their share in aggregate payments increases markedly.

The conclusion that they were larger during the depressed 1930's than during the prosperous 1920's, and that as a share in aggregate payments to individuals they were at least about the same during the last decade of depression and recovery as during the first decade of prosperity, is confirmed by a comparison of the recent years of cyclical expansion, 1936 and 1937, with the years of cyclical peaks in the 1920's. In 1929 prices individuals' savings embodied in capital formation were highest in 1936 and 1937; for their percentage shares in aggregate payments also, these were among the highest years.



TABLE 40

Individuals' and Entrepreneurial Savings Embodied in  
Capital Formation and their Percentage Share of  
Aggregate Payments to Individuals, 1919-1938  
Current and 1929 Prices (absolute figures in billions of dollars)

	PAYMENTS AND SAVINGS INCL. ENTREPRENEURIAL SAVINGS				PAYMENTS AND SAVINGS EXCL. ENTREPRENEURIAL SAVINGS			
	CURRENT PRICES		1929 PRICES		CURRENT PRICES		1929 PRICES	
	Savings (1)	Savings as % of agg. pay. (2)	Savings (3)	Savings as % of agg. pay. (4)	Savings (5)	Savings as % of agg. pay. (6)	Savings (7)	Savings as % of agg. pay. (8)
1919	10.6	16.4	8.3	14.5	5.1	8.6	4.0	7.5
1920	7.2	10.3	4.8	8.6	5.6	8.2	3.7	6.9
1921	1.6	2.8	1.4	2.6	1.0	1.7	0.9	1.6
1922	3.4	5.7	3.1	5.1	3.5	5.8	3.1	5.3
1923	6.0	8.7	5.7	8.4	4.9	7.2	4.6	6.9
1924	3.7	5.3	3.5	5.0	2.9	4.1	2.7	3.9
1925	6.8	9.3	6.6	9.2	5.2	7.3	5.0	7.1
1926	4.8	6.2	4.5	6.0	2.7	3.6	2.6	3.5
1927	5.3	6.9	5.2	6.8	4.2	5.6	4.2	5.5
1928	4.6	5.8	4.5	5.7	3.6	4.7	3.6	4.6
1929	6.3	7.5	6.3	7.5	5.2	6.3	5.2	6.3
1930	2.8	3.6	2.9	3.7	3.4	4.4	3.6	4.5
1931	2.8	4.5	3.6	5.0	4.9	7.5	6.2	8.3
1932	1.5	3.1	2.0	3.1	5.0	9.6	6.6	9.7
1933	0.5	1.1	0.7	1.1	2.9	5.9	3.9	6.0
1934	1.3	2.4	1.7	2.6	1.6	3.0	2.2	3.3
1935	4.6	7.8	2.5	3.7	4.3	7.5	2.4	3.5
1936	8.3	12.6	8.6	11.0	7.0	10.9	7.3	9.5
1937	7.3	10.2	7.3	9.0	6.8	9.6	6.9	8.5
1938	3.7	5.6	4.2	5.3	3.5	5.3	3.9	4.9
<i>Average</i>								
1919-23	5.8	8.8	4.7	7.8	4.0	6.3	3.3	5.6
1924-28	5.0	6.7	4.9	6.5	3.7	5.1	3.6	4.9
1929-33	2.8	4.0	3.1	4.1	4.3	6.7	5.1	7.0
1934-38	5.0	7.7	4.9	6.3	4.7	7.3	4.5	5.9
1919-28	5.4	7.7	4.8	7.2	3.9	5.7	3.4	5.3
1929-38	3.9	5.8	4.0	5.2	4.5	7.0	4.8	6.4

Furthermore, even in the depressed years 1931-33 the share of individuals' savings in aggregate payments was as high as during the prosperous 1920's. As reiterated again and again, estimates of individuals' savings embodied in capital formation are subject to serious qualifications. But distortions caused by errors in estimates are not sufficiently great to invalidate the general import of the conclusion.

Even the statement that individuals' savings embodied in

capital formation, both absolutely and as percentages of aggregate payments were, in 1929 prices, at least about the same during the 1930's as during the more prosperous 1920's may seem inexplicable; yet such behavior might well have been expected. The assumption of large savings by individuals in prosperous times is contingent upon the inclusion of capital gains of various types and a disregard of the extent to which an increase in individuals' indebtedness (a common occurrence during recent expansions) means an increase in consumption that leaves small margin for savings. It is not unlikely that during the 1920's, especially in the later years of the decade, when speculative gains were enormous and people spent as if good times would continue indefinitely, 'real' savings, i.e., savings available for capital formation, were much smaller absolutely and relatively than they seemed. It is beyond doubt that a large portion of what individuals themselves considered savings were illusory capital gains, investments of the type that could never constitute real additions to capital goods; and that 'real' savings by consumers as a whole were materially offset by an increase in consumers' and individuals' indebtedness.

In the 1930's the situation was different. The pressure for liquidation of individuals' indebtedness must surely have been a powerful incentive to curtail consumption and save more, even on smaller incomes. The absence of speculative gains and a dull stock market were not conducive to spending at the expense of saving and greatly lessened the chance that individuals' monetary savings would be dissipated in stock market losses. With the passing of the banking crisis in 1933 the tendency to save must have been strengthened considerably by the experience of the depression and by a desire to attain greater security against future calamities. Thrift, together with fewer opportunities to pursue capital gains or speculate, might well explain why savings embodied in capital formation were not lower in the 1930's than in the 1920's, and were higher in the peak years 1936 and 1937, and why they consti-

tuted a larger proportion of aggregate payments to individuals. Above all, it must not be overlooked that aggregate payments per capita in the second decade (in 1929 prices) were slightly higher, not lower, than in the first; and that under such conditions, the change in the factors affecting the flow of individuals' savings into capital formation might easily have given rise to the movements shown in Table 40. At any rate, the evidence must be accepted at least tentatively and as at least warranting a hypothesis that the relative level of individuals' 'real' savings was not lower and perhaps was slightly higher during the 1930's than during the 1920's.

### 3 *Consumers' Outlay by Type of Product*

The capital formation study yields estimates of consumers' outlay on perishable commodities, defined as lasting usually less than six months (food products, fuel, drugs, and the like); on semidurable, lasting between six months and three years (chiefly clothing, shoes, and some light household articles); and on durable, lasting more than three years (passenger cars, heavy household equipment such as washing machines, stoves, refrigerators, and furniture). The estimates are approximate in that no allowance is made for minor fractions of consumer goods sold to units other than ultimate consumers. But they do gauge roughly what consumers spend on these various categories of commodities; and by subtracting these amounts from total consumers' outlay we get a rough estimate of consumers' expenditures on services not embodied in new commodities (payments for rent, for professional and personal services, to governments, etc.).

In the annual apportionment of consumers' outlay among the four categories errors are substantial enough to cause year to year changes in the outlay on services that are not corroborated by other knowledge. For example, the estimated outlay on services not embodied in new commodities increases during all contractions except the very severe one from 1929 to 1932; probably because estimates of consumers' outlay on

commodities exaggerate their levels during expansions and underestimate them during contractions, since the shares of these commodities sold to enterprises (for which no allowance is made) are likely to be higher in prosperity than in depression. While these errors are minor compared with amounts spent on finished commodities or with total consumers' outlay, they loom large in the estimate of outlay on services, computed as the difference between consumers' outlay and the outlay on all commodities. For this reason we thought it best to confine the study of the apportionment of consumers' outlay to periods in which the effects of movements during cyclical swings could be averaged out—the five reference cycle periods, the four quinquennia, and the two decades (Table 41).

Expenditure on commodities accounts, on the whole, for about two-thirds of consumers' outlay, expenditure on services not embodied in new commodities, for one-third. This apportionment is not unlike that of national income between commodity producing and commodity transporting and distributing industries on the one hand (60 per cent) and the service industries on the other (40 per cent) (Ch. 5). However, the distribution of national income by type of productive operation need not resemble that of consumers' outlay by type of product: service industries may contribute to the value of commodities so far as services become embodied in new commodities, thereby raising the cost of the latter to ultimate consumers.

By far the largest part of consumers' outlay is on perishable commodities—about 40 per cent of total outlay. Somewhat more goes for semidurable than for consumers' durable, the former accounting for over 15 per cent of total outlay, the latter for slightly over 10 per cent.

In current prices the share of semidurable commodities decreases over the period; the share of services not embodied in new commodities increases. The share of perishable commodities shows no definite movement, although the averages for the first four reference cycles decline continuously. How-

TABLE 41

## Consumers' Outlay and its Percentage Distribution by Type of Product

## Current and 1929 Prices, Selected Periods, 1919-1938

	CURRENT PRICES					1929 PRICES				
	CONSUMERS' OUTLAY (billions of dollars)		PERCENTAGE SHARE			CONSUMERS' OUTLAY (billions of dollars)		PERCENTAGE SHARE		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Average</i>										
1919-21	57.6	42.8	18.7	10.7	27.8	51.3	41.1	14.4	10.0	34.6
1921-24	60.4	37.4	17.3	11.4	33.9	59.4	39.8	15.1	10.6	34.5
1924-27	69.3	37.1	16.6	12.8	33.6	68.2	38.4	15.0	13.2	33.4
1927-32	67.3	36.9	15.5	10.9	36.7	71.2	38.5	15.6	11.0	35.0
1932-38	54.7	41.0	14.8	10.0	34.1	66.4	42.2	15.4	9.4	32.9
1919-23	58.4	40.6	18.4	11.1	29.9	54.4	40.4	15.0	10.5	34.1
1924-28	70.3	37.1	16.6	12.7	33.7	69.2	38.1	15.2	13.1	33.6
1929-33	60.7	37.4	14.8	9.9	37.9	68.7	40.1	15.2	9.6	35.1
1934-38	58.0	41.8	15.0	10.7	32.4	68.5	41.6	15.5	10.1	32.8
1919-28	64.4	38.8	17.5	11.9	31.8	61.8	39.3	15.1	11.8	33.9
1929-38	59.3	39.6	14.9	10.3	35.2	68.6	40.8	15.4	9.8	33.9

ever, in the last cycle the share is not significantly lower than at the beginning of the period. The share of consumers' durable commodities likewise shows no significant trend, the averages for the successive cycles first rising, then declining.

Adjustment for fluctuations in prices suggests that a substantial part of the change over the period in the apportionment of consumers' outlay in current prices is due to differences in price movements among the various commodity and service groups. In the apportionment in 1929 prices the share of perishable commodities again fails to reveal a trend, but even the changes in the cyclical and quinquennial averages are smaller than in the percentage distribution of totals in current prices. The share of semidurable commodities in 1929 prices does not decline, the averages for reference cycles and quinquennia suggesting, if anything, a slight rise. Consequently the decline in the share of semidurable commodities in current prices seems to be due to the greater decline in the prices of this group than in those of other commodity and service groups. The share of consumers' durable commodities in 1929 prices shows the same rise and decline as in current prices, and while the average for the second decade is lower than for the first, the decline over the period is not sufficiently consistent to be attributed much secular significance. Finally, the averages for both reference cycles and quinquennia of the share of services not embodied in new commodities in 1929 prices show no distinct movement over the period and there is no change from the first to the second decade.

Thus, when the differential movements in the price levels of various commodity and service groups are allowed for, there seem to be no significant shifts in the apportionment of consumers' outlay. Although our estimates are crude, the conclusion seems reasonable in the light of what little we know about the stability of the composition of consumers' budgets in terms of large categories of commodities and services. Greater use of durable commodities tends to be accompanied by larger outlay on such non-durable goods as are involved in their utilization; for

example, greater use of passenger cars means larger consumption of gasoline and oil, more demand for services not embodied in new commodities (repair services, etc.) and even for semidurable goods (such as tires and tubes). On the other hand, any increase in the relative importance of non-durable goods is limited in that a rising standard of living is ordinarily accompanied by an increase in the demand for durable goods. Indeed, consumers' demand for goods of varying durability is perhaps governed by the rather fixed patterns of life in general, patterns determined by persistent rhythms of daily, seasonal, and secular wants that do not allow for substantial shifts in relative weight among goods that must be consumed within periods of significantly varying length.

#### *4 National Income by Type of Product*

By combining the subdivisions under net capital formation and under consumers' outlay we get a twofold apportionment of national income (Table 42): one separating all non-durable types of final products, whether commodities or services, from durable; the other separating all commodities from services not embodied in new commodities. In the first, non-durable types comprise perishable and semidurable commodities and services not embodied in new commodities; and durable comprise construction, consumers' and producers' durable. This still leaves a minor portion of national income not allocated by durability, viz., net flow to inventories and changes in claims against foreign countries. In the second classification the commodities group comprises not only all categories of commodities and construction but also net flow to inventories; the group of services is naturally confined to services not embodied in new commodities; and the unallocable portion is represented by changes in claims against foreign countries, a mixture of commodity and service transactions. In Table 42 the percentages are shown for periods for which most of the cyclical swing is averaged out, since the crudeness of the estimate of services precludes valid annual comparisons.

TABLE 42

National Income, Percentage Distribution by Type of Product  
Current and 1929 Prices, Selected Periods, 1919-1938

	BY DURABILITY			BETWEEN COMMODITIES AND SERVICES		
	Non- durable	Durable	Unal- locable	Com- modities	Services	Unal- locable
	(1)	(2)	(3)	(4)	(5)	(6)
CURRENT PRICES						
<i>Average</i>						
1919-21	78.4	12.8	8.8	72.0	24.6	3.4
1921-24	81.3	16.6	2.1	67.9	31.1	1.0
1924-27	78.2	20.5	1.4	69.4	30.0	0.5
1927-32	85.2	15.3	-0.5	64.3	35.2	0.5
1932-38	90.1	10.0	-0.1	65.4	34.4	0.2
1919-23	78.9	14.5	6.6	71.0	26.7	2.2
1924-28	78.5	20.3	1.2	69.1	30.3	0.6
1929-33	90.5	11.0	-1.4	61.5	38.1	0.4
1934-38	86.2	12.4	1.4	68.4	31.4	0.2
1919-28	78.7	17.4	3.9	70.1	28.5	1.4
1929-38	88.3	11.7	0.0	65.0	34.8	0.3
1929 PRICES						
1919-21	80.5	12.7	6.8	66.2	30.9	2.8
1921-24	82.4	15.7	1.8	67.2	31.8	1.0
1924-27	78.0	20.8	1.2	69.5	30.0	0.5
1927-32	85.2	15.2	-0.5	66.0	33.4	0.6
1932-38	91.2	9.1	-0.3	66.6	33.2	0.2
1919-23	80.5	14.2	5.2	67.4	30.7	1.9
1924-28	78.3	20.7	1.1	69.2	30.3	0.6
1929-33	90.9	10.5	-1.4	64.5	35.1	0.4
1934-38	87.3	11.5	1.2	67.9	31.9	0.2
1919-28	79.4	17.4	3.1	68.3	30.5	1.2
1929-38	89.1	11.0	-0.1	66.2	33.5	0.3

The relative importance of non-durable types is quite high, averaging about 85 per cent of national income for the period. Thus the preponderant part of the economy's current product is consumed within a short time, an indication of the extent to which maintenance of current consumption depends upon maintenance of national income. The share of non-durable products increased over the period. Although the rise did not begin until the 1930's, still since the averages for the last reference cycle and quinquennium are higher than for the first,



and similar movements appear in the percentage shares even after adjustment for price changes, it attains some significance. It might be offset substantially by an allowance for the portion of non-durable products in the unallocable item, flow to inventories, and changes in claims against foreign countries. And, correspondingly, the share of durable commodities does not decline as much as the share of non-durable rises. The movement of the former, with the long cycle it seems to describe, suggests the influence of construction. Yet the five cyclical averages do indicate a rather significant drop in the share of durable commodities in national income. Whether this is transient, due to a lag in the recovery of the construction cycle and in general recovery from the 1929-32 contraction, or whether it is indicative of a more persistent trend toward an increasing share of non-durable products (especially services not embodied in new commodities) only the future can tell.

Roughly two-thirds of our current product assumes the form of commodities. In current prices the share declines markedly over the period, and the share of services not embodied in new commodities rises. Since the unallocated remainder is small, the relative loss in the share of commodities and the relative gain in the share of services would not be affected much, even if it were added fully to one or the other. The change in the apportionment in current prices is thus similar to that observed in Chapter 5 for the distribution of national income among industries classified by type of productive operation—a decline in the share of commodity producing industries and a rise in the share of service industries.

After adjustment for price changes, the decline in the share of commodities and the rise in the share of services become much less marked. Indeed, the averages for both business cycles and quinquennia indicate such a small decline in the share of commodities that it may be treated as insignificant. The share of services not embodied in new commodities still rises, but much less than the share in current prices. It would seem, therefore, that a major part of the shift in the shares of com-

modities and of services in national income in current prices is due to the differences in movement between prices of commodities and of services; and that after adjustment for price changes, the decline in the share of commodities and the rise in the share of services are so small as to be of doubtful significance.

### 5 *Summary*

a) Net capital formation averaged over the period about 6 per cent of national income; and it is this low fraction that measures the share of the economy's net current product that was added to the stock of capital goods in the country or to claims against foreign countries.

b) The share of net capital formation in national income declined over the period by reason of the extremely severe contraction in 1929-32 and the failure of capital formation to recover sufficiently to offset fully the effects of that contraction.

c) Net capital formation fluctuates more violently than national income during business cycles, causing its share in national income to fluctuate in close conformity to them.

d) The decline over the period in the share of capital formation in national income is accounted for by the decline in the share of private capital formation. The share of public construction, the only non-private component of capital formation that can be segregated, does not decline.

e) The great sensitivity of capital formation to business cycles is due largely to the close conformity of two of its chief components, net flow to inventories and net value of producers' durable goods, to business cycles. Of the other components, public construction and changes in claims against foreign countries are least responsive.

f) When net capital formation is apportioned among savings of various types, the share attributable even during 1919-28 to corporate savings amounts to less than 15 per cent; to savings of unincorporated firms, to about 20 per cent; to savings of governments, to more than 15 per cent; and to indi-

viduals' savings, to 50 per cent. This dominance of the share attributable to individuals' savings was even more marked in the second decade, when savings of enterprises became negative.

g) The decline from the first to the second decade in the shares of net capital formation attributable to savings of enterprises (private and public) is quite marked. There is a correspondingly sharp increase in the share attributable to individuals' savings.

h) The crude estimates of individuals' savings embodied in net capital formation suggest that, in 1929 prices, they were, on the average, not lower in the 1930's than in the 1920's; and their share in aggregate payments to individuals was at least about the same during the second as during the first decade. We did not attempt to estimate the amounts individuals think they saved, or individuals' savings as reflected by records of financial institutions, records that usually disregard several positive and negative components of savings in their bearing upon capital formation.

i) In the apportionment of consumers' outlay by type of product the share of perishable commodities averages over 40 per cent; of semidurable commodities, somewhat over 15 per cent; of durable commodities, about 11 per cent; and of services not embodied in new commodities, about 33 per cent.

j) In current prices the share of semidurable commodities in consumers' outlay declines over the period; that of services not embodied in new commodities, rises; that of perishable commodities shows no definite movement; and that of durable commodities declines, although far from consistently. Adjustment for price changes reduces these shifts appreciably and suggests that, since the first World War, there have been no significant long term changes in the apportionment of consumers' outlay in 1929 prices among the four categories of goods classified by durability.

k) Non-durable goods constitute the overwhelming proportion of national income, averaging about 85 per cent. In both

current and 1929 prices the share of non-durable goods seems to increase over the period; that of durable to decline.

1) Commodities seem to account on the average for two-thirds of national income; in current prices their share declines appreciably over the period; that of services not embodied in new commodities rises. With the adjustment for price changes the loss in the share of commodities and the gain in that of services are materially reduced, although there are still traces of a decline in the share of commodities and a somewhat more obvious indication of a rise in the share of services. However, the shifts are so minor that they cannot be attributed much significance.

*Appendix to Chapter 7: Comparison with Published Estimates of Individuals' Savings*

The crudeness of our estimates of individuals' savings embodied in capital formation, the importance of the subject, and the interest that attaches to any evidence that bears upon it led us to compare our estimates with others. Because of differences in concept and scarcity of reliable data, such comparisons cannot serve as valid checks upon the accuracy of any one set of estimates. But they should reveal the substantial differences, suggest reasons for them, and be conducive to more intelligent interpretation and use.

*1 Consumer Expenditures Study Estimate for 1935-36*

The most recent and perhaps most thorough estimate of individuals' savings in this country is for a year extending roughly from the middle of 1935 to the middle of 1936 by the National Resources Committee (*Consumer Expenditures in the United States*; Washington, 1939). Based largely upon

<sup>1</sup> I am indebted to A. G. Hart of Iowa State College, and Raymond Goldsmith and Irwin Friend of the Securities and Exchange Commission, for valuable suggestions in connection with parts of this Appendix.

a sample study of how families and individuals, including also entrepreneurs, spend their income, they are, except for items noted below, roughly comparable to our estimate of individuals' and entrepreneurs' savings embodied in capital formation.

Savings are defined in the report (p. 22) as "net change in assets and liabilities of the family (or single individual) during the year, exclusive of gains and losses from revaluation of assets". Appreciation and depreciation of assets, whether realized or not, are not allowed for in either income or savings; and it is stated that the definition of savings "conforms to the accepted rule that savings equals income less expenditures for current consumption and for gifts and personal taxes" (p. 22). However, profits and losses on assets bought and sold within the year are included in income and hence in savings.

After examining the questionnaire on changes in assets and liabilities and the description of various concepts involved in determining savings we concluded that savings as estimated by the National Resources Committee differ from our individuals' (including entrepreneurs') savings embodied in capital formation in the following important respects:

a) The N.R.C. estimate does not allow for the depreciation of residential real estate owned by individuals and inhabited by its owners. The imputed rental value was added to income and included again under expenditures. There seems to be no provision in the balance sheet of assets and liabilities for depreciation on real estate. To the extent that it is not allowed for, the N.R.C. total savings is larger than our savings embodied in net capital formation.

b) It is not clear whether in the N.R.C. estimate expenditures incurred in investment (brokerage fees, interest on loans made to carry securities) are allowed for and whether purchases of various types of assets on the positive side of the balance sheet include charges in addition to the net value of the asset. Consequently the N.R.C. estimate of savings may be inflated by using the cost of assets purchased instead of the net market value of assets

c) If savings, expenditures, and family income were reconciled, and gains and losses from sales of assets were included in income, they must have been included also under savings (and no figures are given to indicate gains and losses or whether they were positive or negative).

d) Both family income and savings, in the case of entrepreneurs, include net profit or loss from business; and net profit and loss reported on the schedules presumably reflect customary practices of business accounting. Therefore, in contrast to our estimate of savings embodied in net capital formation, the N.R.C. estimate of individuals' savings is affected by gains and losses on sales of capital assets, revaluation of inventories, and the use of the cost basis in estimating depreciation. However, the N.R.C. report states explicitly that only quantity changes in farmers' inventories are taken into account (p. 22, footnote 27).

e) The treatment of savings in connection with life insurance, building and loan associations, and similar savings institutions suggests that the N.R.C. estimates omit an item included in ours—the accrual to individuals' savings derived from the excess of receipts, by life insurance companies and other associations, over and above current costs of operation. In the N.R.C. estimates, payments of premiums or new payments to associations are alone considered evidence of savings. While annuities and benefits are included in income, the balance sheets would not reveal payments of annuities or of benefits as a source of savings since there would be a corresponding reduction in assets outstanding. In our estimate such net receipts are included under individuals' savings, just as much as their actual in-payments (both, of course, so far as they are embodied in net capital formation).

When we try to express these differences in scope quantitatively, we find that there is no way, with the present data, of approximating costs of investment or savings and losses from purchases and sales of assets for 1935–36 (items b and c). But it

may reasonably be assumed that both amounts and their sum are small compared to total individuals' savings.

The other items may be roughly approximated: (a) Depreciation on owner-occupied residential real estate in 1935-36 is approximately \$800 million (derived from an estimate of depreciation on all residential property, minus an allowance for residential property owned by corporations, the remainder apportioned on the basis of ratios of imputed to money rent received by individuals). (d) Estimated from the national income study to be about \$120 million, the excess of the accounting measure of entrepreneurial net savings over adjusted net savings (average of items for 1935 and 1936). (e) Estimated to be roughly \$1,000 million, the excess of receipts, by life insurance companies and other associations of individuals, of dividends, interest, rent, and all forms of property income over current costs of operation (wages, salaries, materials, and dividends to stockholders, but, of course, excluding payments of annuities and benefits).<sup>2</sup> The adjusted estimate of savings on the basis of the N.R.C. study for 1935-36 would then be, in millions of dollars:

Present N.R.C. estimate	5,978
Minus depreciation	800
Minus adjustment of entrepreneurial savings	120
Plus accruals of life insurance companies and similar institutions	1,000
Net total	6,058

Our estimates of individuals' savings embodied in capital formation are \$4.6 billion for 1935 and \$8.3 billion for 1936. If we average these totals in accordance with the distribution of monthly income payments, as shown for these two years in Department of Commerce reports, we obtain the following: ratio of the last six months in 1935 to the annual total, 0.518; ratio of the first six months in 1936 to the annual total, 0.473; total for 1935-36, \$6.31 billion.

<sup>2</sup> This is the estimate made in the N.R.C. report, in the reconciliation with the Department of Commerce national income total (see *Consumer Incomes in the United States*, p. 35, footnote 5.)

According to these calculations, our estimate exceeds that of the N.R.C. by at least \$0.25 billion. The errors accounting for the difference may be in both sets of estimates. The N.R.C. estimates of income (and hence of savings) are some 3 per cent less than the comparable Department of Commerce estimates, excluding the shortage due to the failure to take into account accruals by insurance companies and similar institutions (see *Consumer Incomes in the United States*, p. 35); and this alone would lead us to raise the N.R.C. estimate of savings by another \$200 million, thereby canceling the difference. It is also possible that savings embodied in net capital formation were much more heavily concentrated in the second half of 1936 than were monthly income payments, which would reduce our estimate of savings for 1935-36 to less than \$6.31 billion.

It can therefore be said that comparison with the N.R.C. estimate does not reveal any significant evidence that our estimate of individuals' savings embodied in capital formation for 1935-36 is either too high or too low.

### 2 *The Brookings Estimate for 1929*

In *America's Capacity to Consume*, Maurice Leven estimates individuals' savings (including entrepreneurial) to be \$17.8 billion for both families and unattached individuals in 1929 (see Tables 5, 6, 9, pp. 260, 261, 265). Our estimate of savings embodied in net capital formation (individuals' plus entrepreneurs') in 1929 is only \$6.3 billion. A large proportion of this striking difference is easily accounted for. The Brookings estimate includes in individuals' income gains on sales of assets to the tune of \$6.2 billion in 1929 (see Table 13, p. 163). Since such gains, even though affecting consumers' expenditures, cannot be included in the latter total, their appearance under income in the Brookings study means that they were included in the savings of families and individuals that had them (mostly in the higher income brackets). Accordingly, we subtract the capital gains from both income and savings, which reduces



distributed income to \$86.8 billion and savings to \$11.6 billion (for the former figure see Table 39, p. 229).

But even after this adjustment, the Brookings estimate of income is larger than our aggregate payments including entrepreneurial savings (\$83.3 billion), owing chiefly to the inclusion of income from odd jobs, gardens, etc. (see Table 13, p. 163). If we assume that the proportion of this additional income saved is the same as of savings to total income after the exclusion of capital gains, the excess in savings is about 4 per cent, or \$0.4 billion, reducing the Brookings estimate to \$11.2 billion.

This residual Brookings estimate exceeds our estimate of individuals' savings embodied in capital formation for the following reasons: (a) So far as it is based upon consumer budget samples, it does not allow fully for depreciation on owner-occupied residential property, or even for depreciation on all residential property owned by individuals. Savings items reported in budget studies are ordinarily derived from financial data relating to the family without a careful calculation of costs or reconciliation of income and expenditures. (b) It does not allow for commissions on purchases of assets and losses on fraudulent securities. (c) It takes into account entrepreneurial net savings before the adjustments involved in making them comparable with net capital formation.

Item (a), for *all* residential property owned by individuals, may be estimated for 1929 as between \$1.8 and \$2.5 billion, with \$2 billion as a roughly acceptable figure. Item (b) is estimated by Clark Warburton to be \$2 billion (see *Studies in Income and Wealth*, Vol. One, p. 109). Item (c), however, is negative for 1929, about -\$0.1 billion. The total adjustment for these three items in the Brookings figures is \$3.9 billion; and the estimate is accordingly reduced to \$7.3 billion.

Thus, after such adjustments as we can make, the Brookings estimate of savings for 1929 still exceeds our estimate of savings embodied in net capital formation by about \$1 billion. Whether this excess is due to the assumption of too high a

savings ratio in the Brookings estimate (especially for the upper income groups, for which data were perforce scanty) or to deficiencies in our estimate, cannot be ascertained with the present data. The significant conclusion, however, is that the huge difference is to be ascribed largely to significant differences in scope; and that after adjustment the residual discrepancy is not more than 16 per cent of our total, a relatively small difference in view of the essential differences in the materials upon which the two estimates are based.

### 3 *Lough's Estimates for 1919-31*

In preparing his estimates of consumption and individuals' savings (*High Level Consumption*, McGraw-Hill, 1935) William H. Lough made some attempt to segregate the latter from those of business and government. But it is not clear to what extent savings of unincorporated firms were excluded from his estimates of savings proper. His estimates are based upon a study of movements in bank deposits, outstanding currency, issuance of securities, acquisitions, etc. Inspection of the procedures (see especially Table 33, pp. 284-5, which describes in detail the derivation of the savings estimate for 1929) suggests that, on the whole, savings of unincorporated firms must have been included with individuals' savings. However, it is likely that several forms of savings by firms (additions to inventories, reductions of debt, and the like) were not covered; other forms, such as acquisition of securities or additions to bank deposits and purchase of farms, on the other hand, probably were.

It seems reasonable to treat Lough's estimates as most nearly comparable with our estimates of individuals' savings, including those of unincorporated firms. The divergences in scope are as follows: (a) Lough's estimates, based upon records of financial institutions and study of the acquisition of assets, omit an adjustment for depreciation chargeable to all residential and other property held by individuals. (b) In estimating payments by individuals for securities, Lough uses the *Commercial and Financial Chronicle* series on non-refunding is-

sues, whereas, according to more recent studies, a considerable proportion of even these non-refunding issues does not represent flow into real investment and capital formation.<sup>3</sup> (c) Lough allows for changes in individuals' debts only in connection with real estate and in estimating security takings, and it is not clear that this allowance covers changes in consumer debt not connected with the purchase or holding of real estate securities. (d) Lough's estimates do not include savings of unincorporated firms in the form of additions to their stocks of goods (inventories or equipment) or changes in their debt. (e) Lough does not allow for accruals to individuals *via* life insurance companies, although he has taken such changes in building and loan associations and other savings organizations into account. In contrast to other estimates, Lough's seem to exclude from savings costs of investment transactions (since the net market value of securities and other assets purchased is used and divided between individuals and enterprises).

It is possible to adjust roughly for item (a) on the basis of depreciation attributable to residential real estate (and residential alone); for (b), since 1921, on the basis of the ratio of Moody's productive issues to the *Chronicle* total of non-refunding issues;<sup>4</sup> for (c), since 1924, by allowing for changes in consumers' debt. No allowance is possible for (d), for, while we have estimates of entrepreneurial net savings, we cannot divide them into the various forms in which they were embodied. Item (e) can be estimated roughly, but not as an annual series.

Lough's estimates, the various adjustments to them, and a comparison with our estimates of individuals' net savings embodied in net capital formation are shown in the accompanying table. The comparison, after all the adjustments, is still between estimates of which one (Lough's) excludes at least a substantial part of net savings of unincorporated firms and

<sup>3</sup> See 'Security Issues and Real Investment in 1929', by George A. Eddy, *Review of Economic Statistics*, May 1937.

<sup>4</sup> *Ibid.*, p. 91.

	LOUGH'S		ALLOWANCE		TOTAL		LOUGH'S		DIFFER- ENCE (6 - 7)
	ESTI- MATES <sup>1</sup> (1)	DEPRE- CIATION (2)	FOR NON- PRODUCTIVE ISSUES <sup>2</sup> (3) (billions of dollars)	CON- SUMER CREDIT <sup>3</sup> (4)	ADJUST- MENT (2 + 3 - 4) (5)	ADJ. MATES, ADJ. (1 - 5) (6)	NBER ESTI- MATES (7)		
1919	9.4	1.8						10.6	
1920	10.1	2.4						7.2	
1921	6.5	1.7	0.7		2.4	4.1	1.6		+2.5
1922	5.4	1.6	0.5		2.1	3.3	3.4		-0.1
1923	7.8	1.9	0.7		2.6	5.2	6.0		-0.8
1924	8.7	1.9	0.7	-0.3	2.9	5.8	3.7		+2.1
1925	10.6	1.9	1.9	-0.8	4.6	6.0	6.8		-0.8
1926	10.6	2.0	2.1	-0.6	4.7	5.9	4.8		+1.1
1927	10.4	2.1	2.3	-0.2	4.6	5.8	5.3		+0.5
1928	8.5	2.1	3.3	-0.8	6.2	2.3	4.6		-2.3
1929	9.3	2.2	4.7 <sup>4</sup>	-1.0	7.9 <sup>4</sup>	1.4 <sup>4</sup>	6.3		-4.9
1930	8.5	2.1	1.8	+0.6	3.3	5.2	2.8		+2.4
1931	4.1	1.8	0.5	+1.1	1.2	2.9	2.8		+0.1

<sup>1</sup> *High Level Consumption*, Table 41, p. 306.

<sup>2</sup> Obtained by correcting Table 38 of *High Level Consumption*. The ratio of productive issues to total non-refunding issues (*Review of Economic Statistics*, May 1937, p. 91) was applied to lines 1, 4, and 11 and the new totals derived as outlined by Lough. The entries in col. 3 are the difference between Lough's original estimates of payments by individuals for securities and the new estimates of these values, derived, as just stated, by a further allowance for non-productive, non-refunding issues.

<sup>3</sup> Rolf Nugent, *Consumer Credit and Economic Stability* (Russell Sage Foundation, 1940), Table 10, p. 116.

<sup>4</sup> The Eddy figure for the *Chronicle* total issues less refunding series is \$9.2 billion; the Lough, \$7.8. In all other years the difference is slight. The use of the Eddy figure for 1929 would reduce the allowance for non-productive issues to \$4.3 billion, making the total adjustment \$7.5 billion, Lough's adjusted estimates \$1.8 billion, and the difference (col. 8), -\$4.5 billion.

accruals to the benefit of individuals on the books of life insurance companies.

In view of the crudeness of the adjustments and the consequently erratic annual movement of Lough's adjusted estimates, we may properly compare only the average level of the two series. For 1921-31 our estimates are only \$0.2 billion larger than Lough's adjusted (col. 6), a truly insignificant difference. Correction for the accrual to individuals of assets on books of life insurance companies would make Lough's estimates about \$0.4 billion *per year* more than ours; allowance for part of net savings of unincorporated firms might add to the average excess of Lough's estimates over ours. One may contend also that at least part of the change in consumers' credit (col. 4) has already been taken into account in Lough's estimates, and that the corresponding downward adjustment of Lough's estimates has, therefore, been too large. But it is

doubtful that the inclusion of these elements would make Lough's estimates more than \$0.5 billion per year greater than ours. On the other hand, the adjustment for depreciation chargeable to real estate held by individuals is probably too small, since it excludes non-residential real estate owned by individuals; there is no allowance for an increase in individuals' indebtedness before 1924; and the adjustments are so crude that we should not ascribe any significance to an average difference of some \$0.5 billion per year, which amounts to no more than about 10 per cent of the average value of either total.

The comparison therefore does not cast serious doubt upon the correctness of the average level or the general movement of our estimates. Nor does the movement of the differences between the two series suggest that our estimates are too low for the 1920's and too high for the 1930's.

#### 4 *Goldsmith's Estimates for 1933-37*

In a report to the Conference on Research in Income and Wealth, Raymond Goldsmith presented in detail his estimates of savings for 1933-37 (see *Studies in Income and Wealth*, Vol. Three, pp. 217-315). Based upon an attempt to take into account movements in individuals' balances in banks, building and loan associations, insurance and pension reserves, absorption of securities and various forms of consumer goods, they measure also business savings of agriculture, but not of unincorporated enterprises in other industries.

Goldsmith's estimates of individuals' savings (excluding their savings invested in automobiles and other consumer durable goods, but including their savings invested in dwellings) plus savings in agriculture are strikingly lower than our estimates of individuals' savings (including entrepreneurial savings) embodied in capital formation. The difference may be due partly to a difference in scope: our estimates attempt to cover fully entrepreneurial net savings (crude and approximate as the estimates necessarily are), whereas Goldsmith's

	1933	1934	1935	1936	1937	Total
			(billions of dollars)			
Goldsmith (see p. 237)	-1.3	+0.5	+0.9	+6.7	+3.9	+10.7
Present NBER	+0.5	+1.3	+4.6	+8.3	+7.3	+22.0
Difference	-1.8	-0.8	-3.7	-1.6	-3.4	-11.3

Dr. Goldsmith has informed me that his estimates are being revised. The revised figures, however, were not available when this chapter went to press.

estimates of individuals' savings include some forms of entrepreneurial savings (cash, securities, etc.) and exclude others (inventories, debt, construction, fixtures, etc. for non-farmers). It is quite possible that during 1935, 1936, and 1937 there were substantial additions to the inventories and equipment of entrepreneurs that were not offset by increases in debt; and that for the period as a whole (1933-37) this item, omitted in Goldsmith's estimates, amounted to some two or three billion dollars. If this is true, adjustment for the difference in scope would reduce the difference in the years in which it is especially marked—1935, 1936, and 1937.

But even after this adjustment, a substantial difference would still remain between the two series. It may be due to an excess in our estimates, a shortage in the Goldsmith estimates, or to both. The excess in our series of individuals' savings embodied in capital formation may be due largely to an underestimate of corporate savings, arising from (a) the tendency of corporations to understate their net income to taxing authorities and to include under current maintenance the cost of certain capital goods which we include in gross capital formation; and (b) our failure to adjust corporate net savings properly for such items as gains and losses from sales of capital assets, effects of inventory revaluation, and the disparity between depreciation charges on cost and reproduction bases. Sources of underestimates of corporate savings (a) would not affect our estimates of capital formation; which means that individuals' savings embodied in capital formation (the difference between net capital formation and corporate and government savings) would be overestimated.

This possibility of an exaggeration of the average level of our estimates of individuals' savings embodied in capital formation would go far to explain the continuous excess of our estimates over Goldsmith's. Yet in the present state of our knowledge, such a possibility can only be conjectured; it can neither be demonstrated nor adjusted for. What is more to the point, this bias toward exaggerating individuals' savings embodied in capital formation would be most pronounced during periods of prosperity, when corporate net profits are high. Hence, the overestimate of individuals' savings, if there is one, should be greater in the 1920's than in the 1930's, and correction would only strengthen our conclusion that individuals' savings did not decline during the depressed 1930's.

On the other hand, as Dr. Goldsmith himself recognizes (see pp. 234-6), there are possible shortages in his estimates. Perhaps the most important source is that he does not take into account reductions in individuals' debts, except for the debt connected with passenger cars (directly) and real estate (see comments by A. G. Hart, *Studies in Income and Wealth*, Vol. Three, pp. 303-4). Hart mentions a decline of \$6.2 billion (an admittedly crude guess) in individuals' short term debts during 1933-35; Goldsmith shows a few million dollars of increase in individuals' debt from changes in installment debt (for consumers' durable goods) and shrinkage in security loans. This enormous difference would account in large part for the difference between Goldsmith's and our estimates, although it probably would not affect years after 1935, in which the differences are substantial.

Why should estimates derived by a careful scrutiny of financial accounts run lower than those obtained by subtracting from net capital formation the net savings of corporations and governments? More data and study are obviously needed to effect a reconciliation, but even if there is some excess in our estimates of individuals' savings embodied in capital formation, the trend in this bias is only likely to confirm our tenta-

tive conclusion concerning the relative levels of these savings in the 1920's and the 1930's.

### 5 *Other Estimates*

We mention three other estimates, although no comparison with our estimates is possible or needed. The first is that of Mordecai Ezekiel, made largely by the application of the savings-income ratio in the Brookings study to the distribution of income in the upper brackets as shown by federal income tax returns (see 'An Annual Estimate of Saving by Individuals', *Review of Economic Statistics*, Nov. 1937). Since the estimates include capital gains, are subject to all the deficiencies of the income concept as defined in tax returns, and apply solely to savings of individuals who file income tax returns, they cannot be compared with any estimate of individuals' savings embodied in capital formation.

The second estimate is that recently published by Gainsbrugh and Osborne of the National Industrial Conference Board staff (see The Conference Board *Economic Record*, March 22, 1940 and April 22, 1940). Savings are shown separately for unincorporated enterprises and for individuals; for the latter the estimates are derived by methods essentially similar to those used by Goldsmith. But whereas individuals' savings are defined as "the difference between consumption expenditures of individuals and earned income received by individuals in that year" (see April 22 issue, p. 180), comparison of income received by individuals (Table 1, p. 181) with consumption expenditures (Conference Board *Economic Bulletin*, Aug. 24, 1939) indicates a total of individuals' savings significantly and inexplicably different from the total given directly and based upon financial and other records. The difference remains whether we consider individuals' savings alone or include also savings of unincorporated enterprises. Since it is not explained, we do not attempt a comparison of the estimates with ours.



Gordon S. Fulcher's method (*Review of Economic Statistics*, Feb. 1941) is essentially similar to ours, since he derives estimates of individuals' savings by subtracting corporate and government savings from capital formation. But by using estimates of gross capital formation and corporate and government gross savings he derives gross savings of individuals, somewhat modified (in comparison with our estimates) by a partial inclusion of capital gains. The general result of Fulcher's analysis is, however, quite similar to ours in indicating a level of individuals' savings in the 1930's not much lower than in the 1920's and a ratio of individuals' savings to total income in 1934-37 about the same as in 1926-29 (Fulcher's estimates cover only the years since 1926).

#### 6 *Concluding Comments*

a) Only our estimates of individuals' savings, including savings of entrepreneurs, can be tested by comparison with other published estimates of individuals' savings. The reasons that make it difficult to estimate savings of unincorporated enterprises make it almost impossible to segregate entrepreneurial savings from other savings in any study based upon records of banking and savings institutions, absorption of securities, etc.

b) The closest comparison that can be made is between our estimates and those based upon a study of how income was spent or saved, provided, of course, that the income concepts are similar. Comparisons with estimates of savings based upon records of financial and other institutions are, however, unsatisfactory, because such records are not explicit concerning elements that may represent depreciation and other reserves rather than savings, and are necessarily incomplete in their coverage of unincorporated firms and of the individuals' complete network of claims and obligations.

c) As far as valid comparisons can be made, the difference between our estimates of individuals' savings embodied in capital formation and other estimates of individuals' savings is fairly small, after adjustments for differences in scope. There

is no significant evidence that the average level shown by our estimates is either too high or too low.

d) It is possible that our estimates of savings embodied in capital formation are somewhat too low in the second half of the 1920's and somewhat too high in the second half of the 1930's. But no evidence substantial enough to affect the broad conclusions in the text concerning the movement of individuals' savings (including entrepreneurial savings) embodied in capital formation has been uncovered.