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CHAPTER 3

The National Financing Task: The Volume of Gross Capital Expenditures

In a closed national economy, the financing task can be reduced to diverting just enough funds from current income to equal total gross capital expenditures on tangible assets which have a length of life exceeding the accounting period of one year and usually set at somewhere around two or three years. All other financial transactions among domestic units, such as the extension or repayment of credit, the issuance and retirement of securities, and purchases and sales of existing financial and tangible assets, necessarily wash out in the consolidation of the accounts on a national scale and do not call for the diversion of current income. In an open economy, the net foreign balance must be added to gross capital expenditures if the financing task is to be measured.

For individual economic units in the household, business, or government sectors—the only decision-makers—the financing task is, of course, much broader. Each economic unit must find funds not only for capital expenditures, but also for the extension of credit to other units and for the acquisition of existing tangible and financial assets. Thus, uses and sources of funds are more extensive on an individual than a national scale. While they are limited for a national economy to gross saving plus net capital imports, individual units may call, in addition to their own gross saving, on borrowing and on the sale of existing assets.

The character of a consolidated national sources-and-uses-of-funds statement, with which this chapter is concerned, is thus very different

from that of a combined statement for the various sectors in the economy, and still more from a combined statement for all economic units taken separately, in which domestic borrowing and lending are preserved (to be discussed in Chapter 4). Whereas for accounting, the consolidated statement is secondary because it is derived from a combined statement, the sequence is reversed for economic analysis. In analyzing national problems, it is necessary to start with a consolidated statement in order to view the financing task of the economy as a whole, unimpeded by the multiple layers of borrowing and lending and of transactions in existing assets among domestic units that constitute a large and essential part of all financing transactions in a developed economy.

In this chapter, we shall therefore briefly review the volume and composition of capital formation in the United States during the postwar period and compare it with earlier periods, first for gross and then for net capital formation. Inquiry into the sources of finance for capital expenditures, in particular the distinction between internal sources (capital consumption allowances and current saving) and external sources (which involve recourse to the capital market), and closer examination of external financing and changes in the assets and liabilities of the main sectors of the economy are reserved for Chapter 4.

The statistics used throughout this chapter, and the following ones, are taken from the comprehensive integrated set of national and sectoral balance sheets and flow-of-funds accounts presented in Volume II of *Studies in the National Balance Sheet of the United States.* While the figures are in most cases based on data developed for the income and product accounts of the Department of Commerce or the flow-of-funds accounts of the Federal Reserve Board, substantial additions—in particular the estimates of the stock of tangible assets—and modifications were required to make the basic data fit into our integrated system of financial accounts. Some of our concepts also differ from those prevailing in official statistics, for instance, the treatment of capital expenditures of the government and of expenditures on consumer durables in a manner parallel to that of business capital expenditures; and the use of replacement cost instead of original cost depreciation. Our estimates of gross and net capital expenditures and of internal and external financing, therefore, often differ from those found in the generally used official documents.

The National Financing Task:

Volume and Composition of Gross Capital Formation in the Postwar Period

During the postwar period (1946–58) gross capital formation, according to the broad concept including consumer durables and durable military assets, averaged $108 billion a year; according to the standard definition excluding consumer and military durables, it was $66 billion; according to the official concept, which also omits government civilian structures, equipment, and inventories, it averaged $56 billion; and according to the narrowest definition, which includes only business-type assets (i.e., nonresidential structures, producer durables, and inventories), it averaged $39 billion. These totals and their main components will be found in Table 12 for the postwar period as a whole.

Probably the best way of visualizing the economic significance of these magnitudes is to compare them with total current output, i.e., gross national product. It is then seen that gross capital formation during the postwar period averaged almost three-tenths of GNP if the broad definition of both capital formation and gross national product is used; that it amounted to one-fifth of GNP in the standard definition of capital formation and to one-sixth of GNP in the Department of Commerce definition of capital formation; but that it equaled less than one-eighth of GNP according to the narrowest definition of capital formation. The significance of these ratios for capital market analysis is that they show the proportions of gross national product which had to be withheld from current expenditures in order to finance capital formation.

Table 13 and Chart 4 show that both the absolute volume of gross capital formation and its share in gross national product have fluctuated considerably from year to year during the postwar period, whichever definition of capital is used. They have done so in the United States for as long as we have statistics, i.e., back to the middle of the nineteenth century, and they have done so in other developed countries. Indeed, these fluctuations have come to be regarded as the chief characteristic of business cycles.

Declines in the absolute and relative volume of capital formation are evident in 1948–49, 1952, 1954, and 1958. These are three periods of recession plus 1952, in which this decline was due primarily to a reduction of inventory following the extraordinarily sharp increases during the Korean War. The sharpest increases in the volume of

TABLE 12

COMPOSITION OF GROSS CAPITAL FORMATION, 1946-58

		Amount (billion dollars)		Share in Total Capital Formation (per cent)		Share in Gross National Product (per cent)	
		Period (1)	Annual Average (2)	Broad Concept (3)	Standard Concept (4)	Broad Concept (5)	Standard Concept (6)
I.	Business capital formation	507.2	39.0	36.3	59.5	10.4	11.6
	1. Nonresidential structures	164.2	12.6	11.7	19.2	3.4	3.8
	2. Equipment	258.4	19.9	18.5	30.3	5.3	5.9
	3. Inventories	71.8	5.5	5.1	8.4	1.5	1.6
	4. Net foreign assets	12.8	1.0	0.9	1.5	0.3	0.3
II.	Household capital formation	596.9	45.9	42.7	24.2	12.2	4.7
	1. Residential structures	205.0	15.8	14.7	24.0	4.2	4.7
	2. Consumer durables	389.9	30.0	27.9	—	8.0	—
	3. Net foreign assets	2.0	0.2	0.1	0.2	0	0
III.	Government capital formation	294.6	22.7	21.1	16.3	6.0	3.1
	1. Civilian structures	110.7	8.5	7.9	13.0	2.3	2.5
	2. Civilian equipment	9.4	0.7	0.7	1.1	0.2	0.2
	3. Civilian inventories	5.4	0.4	0.4	0.6	0.1	0.1
	4. Monetary metals	1.5	0.1	0.1	0.2	0	0
	5. Net foreign assets	11.9	0.9	0.9	1.4	0.2	0.3
	6. Military structures	18.1	1.4	1.3	—	0.4	—
	7. Military equipment	123.4	9.5	8.8	—	2.5	—
	8. Military inventories	14.2	1.1	1.0	—	0.3	—
IV.	1. Total, broad concept (I + II + III)	1,398.7	107.6	100.0	—	28.6	—
	2. Total, standard concept [I + II (1 & 3) + III (1 - 5)]	853.1	65.6	61.0	100.0	17.4	19.4
	3. Total, Dept. of Commerce concept [I + II (1&3) + III(4&5)]	727.6	56.0	52.0	85.3	14.9	16.7
	4. Total, narrow concept (I)	507.2	39.0	36.3	59.5	10.4	11.6

NOTES TO TABLE 12

Source: All tables references below are to National Balance Sheet, Vol. II, unless otherwise specified.

Cols. 1 and 2
Line I-1: Table VIII-a-2, lines 1-5.
Line I-2: Table VIII-a-4, lines 1-5.
Line I-3: Table VIII-a-6b, lines 1-5.
Line I-4: National Wealth, Table A-45, first differences of col. 3.
Line II-1: Table VIII-a-1, lines 1-5.
Line II-2: Table VIII-a-5, line 8.
Line II-3: National Wealth, Table A-45, first differences of col. 2.
Line III-1: Table VIII-a-1 and VIII-a-2, lines 6-7.
Line III-2: Table VIII-a-4, lines 6-7.
Line III-3: Table VIII-a-6b, lines 6-7.
Line III-4: National Wealth, Table A-44, first differences of col. 1.
Line III-5: Ibid., Table A-45, first differences of col. 4.
Line III-6: Table VIII-a-1 and VIII-a-2, line 9.
Line III-7: Table VIII-a-4, line 9.
Line III-8: Table VIII-a-6b, line 9.

Cols. 3-6, numerators: Corresponding lines of col. 1.
Col. 3, denominator: Line IV-1, col. 1.
Col. 4, denominator: Line IV-2, col. 1.
Col. 5, denominator: Department of Commerce estimates of GNP plus depreciation at replacement cost of consumer durables (difference between Tables VIII-a-5 and VIII-a-5b, line 8) and of government civil and military capital expenditures (difference between Tables VIII-a-7 and VIII-a-7b, lines 6, 7, and 9). This adjustment is a crude approximation to the use value of consumer durable and government capital.
Col. 6, denominator: Dept. of Commerce estimates of GNP (Survey of Current Business, July 1960, Table 1).

Note: Components may not add to totals because of rounding here and elsewhere in this chapter.

capital formation were registered in 1950, 1953, 1955, and 1959 (the last of these years generally not being included in our analysis).[1] All these years—with the exception of 1953—are the initial years of cyclical recoveries. The correspondence between decreases and sharp increases in the volume of capital formation and its share in gross national product and the plan of the business cycle would be equally pronounced if adjustments were made for price changes.

When the influence of business cycles is roughly eliminated, as is done in the lower part of Table 13, by showing averages for full cycles [2] it is seen that, although the dollar volume of gross capital formation (broad concept) almost doubled between the first postwar cycle of 1946–49 and the third cycle of 1954–58, the share of gross capital formation in GNP was almost the same in all three cycles.

[1] For 1959 data, see *Survey of Current Business,* July 1960.

[2] Since business cycles do not coincide with calendar years, the cycle averages include one-half of the first and last years of the cycle, using the NBER dating. Calculations using quarterly figures (not available for our estimates of capital formation but derivable from reasonably comparable concepts) show a similar stability in the ratio of capital formation to gross national product over entire business cycles.

Closer inspection of the figures indicates a slow increase in the share of gross capital formation in GNP between the first and the third cycles, according to the broad concept of capital formation; the standard and narrow concepts, however, show a decline between Cycles I

TABLE 13

ANNUAL FLUCTUATIONS IN GROSS CAPITAL FORMATION, 1946-58

	Absolute Figures (billion dollars)			Share in Gross National Product (per cent)		
	Broad Concept (1)	Standard Concept (2)	Narrow Concept (3)	Broad Concept (4)	Standard Concept (5)	Narrow Concept (6)
1946	64.5	45.7	34.3	26.9	21.7	16.3
1947	80.8	57.8	36.7	30.3	24.7	15.7
1948	79.3	54.1	33.1	27.2	20.9	12.8
1949	66.0	38.1	17.3	22.8	14.8	6.7
1950	100.2	65.2	45.4	31.6	22.9	16.0
1951	110.2	71.2	47.4	30.2	21.6	14.4
1952	103.7	55.2	29.2	26.8	15.9	8.4
1953	116.9	63.0	33.4	28.6	17.2	9.1
1954	111.4	61.2	32.0	27.2	16.9	8.8
1955	133.6	78.2	44.6	29.9	19.7	11.2
1956	145.7	90.4	55.4	30.8	21.6	13.2
1957	150.1	92.4	56.6	30.0	20.9	12.8
1958	136.5	80.8	41.7	27.3	18.2	9.4
Cycle Averages						
1946-49	75.1	51.3	31.9	27.4	21.1	13.1
1949-54	103.9	60.8	36.0	28.4	18.6	11.0
1954-58	138.3	83.0	48.4	29.5	20.0	11.6
Period Average						
1946-58	107.6	65.6	39.0	28.6	19.4	11.6

Source: Each year's total corresponds to the concepts in Table 12 as follows:
Col. 1: Table 12, col. 1, line IV-1.
Col. 2: Table 12, col. 1, line IV-2.
Col. 3: Table 12, col. 1, line IV-4.
Col. 4, numerator: Col. 1 of this table; denominator: same as for Table 12, col. 5.
Col. 5, numerator: Col. 2 of this table; denominator: same as for Table 12, col. 6.
Col. 6, numerator: Col. 3 of this table; denominator: same as for Table 12, col. 6.

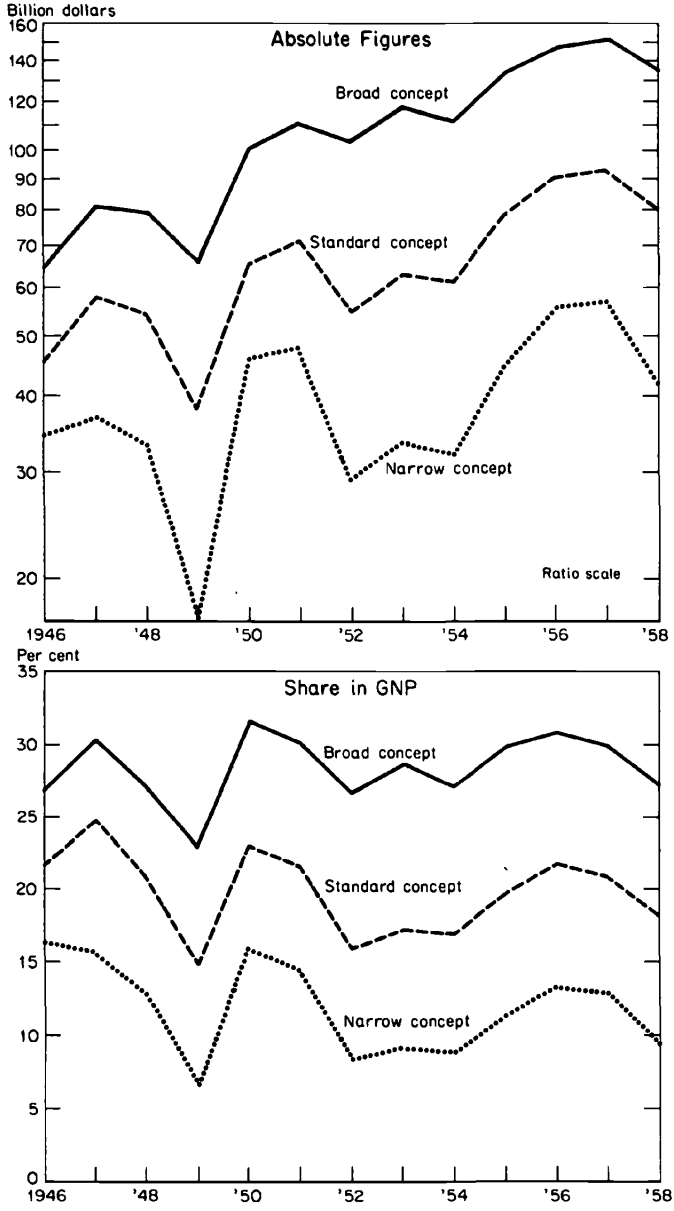
and II; and there is no definite change between Cycles II and III for the narrow concept. It seems, therefore, premature to deduce from the figures for these three cycles the existence of a trend.

Stability is also fairly pronounced in the composition of gross capital formation during the postwar period, although fluctuations are larger than in total capital formation, as might be expected.

For the entire thirteen years, approximately one-third of total gross

CHART 4

GROSS CAPITAL FORMATION, 1946–58



Source: Table 13.

TABLE 14

GROSS INVESTMENT IN CURRENT PRICES, 1946-58

	Annual Averages (billion dollars)				Distribution (per cent)							
	1946 -49 (1)	1949 -54 (2)	1954 -58 (3)	1946 -58 (4)	1946 -49 (5)	1949 -54 (6)	1954 -58 (7)	1946 -58 (8)	1946 -49 (9)	1949 -54 (10)	1954 -58 (11)	1946 -58 (12)
A. By type of wealth					BASED ON LINE A-10a				BASED ON LINE A-10b			
1. Residential structures	9.98	15.74	20.79	15.77	13.5	15.1	15.0	14.7	14.6	15.2	15.3	15.1
2. Other private structures	7.96	11.77	17.31	12.63	10.8	11.3	12.5	11.8	11.7	11.3	12.8	12.1
3. Government structures (civil)	3.97	8.20	12.25	8.52	5.4	7.9	8.9	7.9	5.8	7.9	9.0	8.1
4. Producer durables	16.12	20.18	25.37	20.60	21.9	19.3	18.3	19.2	23.6	19.4	18.7	19.7
5a. Gross inventories	7.48	4.91	5.22	5.94	10.1	4.7	3.8	5.5				
5b. Net inventories (value adjusted)	2.00	4.38	2.66	3.14					2.9	4.2	2.0	3.0
6. Consumer durables	21.22	29.85	37.70	30.00	28.8	28.6	27.3	27.9	31.1	28.8	27.8	28.7
7a. Total (incl. 5a)	66.73	90.65	118.64	93.46	90.5	86.9	85.8	86.9				
7b. Total (incl. 5b)	61.25	90.12	116.08	90.66					89.7	86.8	85.5	86.6
8. Net foreign assets	4.36	0.47	1.97	2.05	5.9	0.5	1.4	1.9	6.4	0.5	1.5	2.0
9. Military expenditures	2.66	13.23	17.66	11.98	3.6	12.7	12.8	11.1	3.9	12.7	13.0	11.4
10a. Total (7a + 8 + 9) [a]	73.75	104.35	138.27	107.49	100.0	100.0	100.0	100.0				
10b. Total (7b + 8 + 9)	68.27	103.82	135.71	104.69					100.0	100.0	100.0	100.0
B. By sector					BASED ON LINE B-8				BASED ON LINE B-9			
1. Nonfarm households	27.84	42.15	55.78	42.64	41.7	46.5	47.0	45.6	40.1	40.6	40.9	40.4
2. Nonfarm unincorp. business [b]	4.70	5.32	7.22	5.78	7.0	5.9	6.1	6.2	6.8	5.1	5.3	5.5
3. Agriculture [b]	6.92	6.84	7.55	7.31	10.4	7.5	6.4	7.8	10.0	6.6	5.5	6.9
4. Finance	0.34	0.40	0.52	0.42	0.5	0.4	0.4	0.4	0.5	0.4	0.4	0.4
5. Nonfinancial corporations [b]	22.19	26.34	34.19	27.64	33.3	29.1	28.8	29.6	32.0	25.4	25.1	26.2
6. State and local governments	3.69	7.61	12.05	8.15	5.5	8.4	10.2	8.7	5.3	7.3	8.8	7.7
7a. Federal government, civil	1.02	1.99	1.32	1.51	1.5	2.2	1.1	1.6				
7b. Federal govt., civil and military	3.68	15.22	18.98	13.50					5.3	14.7	13.9	12.8
8. Total, civil expenditures	66.70	90.65	118.63	93.45	100.0	100.0	100.0	100.0				
9. Total, civil and military expenditures [a]	69.36	103.88	136.29	105.44					100.0	100.0	100.0	100.0

NOTES TO TABLE 14

Source: All table references below are to National Balance Sheet, Vol. II, unless otherwise specified.

Line A-1: Table VIII-a-1, lines 1-5.
Line A-2: Table VIII-a-2, lines 1-5.
Line A-3: Table VIII-a-1, and VIII-a-2, lines 6 and 7.
Line A-4: Table VIII-a-4, line 8.
Line A-5a: Table VIII-a-6b, line 8.
Line A-5b: Table VIII-a-6d, line 8.
Line A-6: Table VIII-a-5, line 8.
Line A-7a: Table VIII-a-7, line 8.
Line A-7b: Table VIII-a-7d, line 8.
Line A-8: National Wealth, Table A-45, first differences of col. 1.
Line A-9: Table VIII-a-7, line 9.
Line A-10a: Sum of lines 7a, 8, and 9 of this table.
Line A-10b: Sum of lines 7b, 8, and 9 of this table.
Lines B-1 through B-9: Table VIII-a-7.

[a] Lines A-10a and B-9 differ because net foreign assets (line A-8) are not included in line B-9.

[b] The concept of inventory used here is the same as in line A-5a.

capital formation (broad concept) consisted of structures; almost three-fifths—of civil and military equipment and consumer durables; 7 per cent—of inventories; and 2 per cent—of net foreign assets. The share of structures and equipment increased between the first and second postwar cycles, while that of inventories and net foreign assets declined very sharply.[3] The latter movements represent changes from the unusually high levels of the early postwar period. Changes from the second to the third postwar cycle, on the other hand, were small in comparison. Similarly, the share of public capital formation was considerably higher in the second and third cycles than in the first cycle, reflecting the low level of military expenditures until the Korean War.

The relationships between gross capital formation according to the broad, standard, and narrow concepts is virtually the same in the second and third cycles. During the first cycle, however, the broad concept was less in excess of the standard and narrow concept, reflecting the lower level of military investment as shown in Table 13.

Turning to the narrower categories of capital formation which may be obtained from Table 14 in current prices and from Table 15 in constant (1947–49) prices, a similar stability is evident for the large components, particularly between the second and third cycles, which are less affected by special factors than the first cycle and hence may reflect a more nearly normal midcentury situation. The shares of residential structures, other private structures, and consumer durables

[3] See Tables 12 and 14.

TABLE 15

GROSS INVESTMENT IN CONSTANT PRICES,[a] 1946-58

	Annual Averages (billion dollars)				Distribution (per cent)							
	1946 -49 (1)	1949 -54 (2)	1954 -58 (3)	1946 -58 (4)	1946 -49 (5)	1949 -54 (6)	1954 -58 (7)	1946 -58 (8)	1946 -49 (9)	1949 -54 (10)	1954 -58 (11)	1946 -58 (12)
A. By type of wealth					BASED ON LINE A-10							
1. Residential structures	10.31	13.69	16.24	13.53	14.7	15.0	14.9	14.8				
2. Other private structures	8.30	10.00	12.57	10.41	11.9	11.0	11.5	11.4				
3. Government structures (civil)	4.00	7.27	9.79	7.29	5.7	8.0	9.0	8.0				
4. Producer durables	16.64	17.39	19.03	17.51	23.8	19.1	17.5	19.2				
5. Inventories	1.90	3.74	2.09	2.75	2.7	4.1	1.9	3.0				
6. Consumer durables	21.80	27.67	34.56	28.30	31.2	30.4	31.7	31.0				
7. Total	62.95	79.76	94.28	79.79	90.1	87.7	86.5	87.5				
8. Net foreign assets	4.12	0.11	1.34	1.66	5.9	0.1	1.2	1.8				
9. Military expenditures	2.83	11.10	13.41	9.73	4.0	12.2	12.3	10.7				
10. Total[b]	69.90	90.97	109.03	91.18	100.0	100.0	100.0	100.0				
B. By sector					BASED ON LINE B-8				BASED ON LINE B-9			
1. Nonfarm households	28.68	38.18	48.33	38.85	45.6	47.9	51.3	48.7	43.6	42.0	44.9	43.4
2. Nonfarm unincorp. business	3.95	4.39	5.24	4.53	6.3	5.5	5.6	5.7	6.0	4.8	4.9	5.1
3. Agriculture	5.71	6.60	5.74	6.09	9.1	8.3	6.1	7.6	8.7	7.3	5.3	6.8
4. Finance	0.36	0.34	0.38	0.36	0.6	0.4	0.4	0.5	0.5	0.4	0.4	0.4
5. Nonfinancial corporations	19.61	21.63	23.88	21.65	31.1	27.1	25.3	27.1	29.8	23.8	22.2	24.2
6. State and local governments	3.77	6.79	9.68	7.01	6.0	8.5	10.3	8.8	5.7	7.5	9.0	7.8
7a. Federal government, civil	0.88	1.84	1.04	1.30	1.4	2.3	1.1	1.6				
7b. Federal govt., civil and military	3.70	12.94	14.46	11.03					5.6	14.2	13.4	12.3
8. Total, civil expenditures	62.96	79.77	94.29	79.79	100.0	100.0	100.0	100.0				
9. Total, civil and military expenditures[b]	65.78	90.87	107.71	89.52					100.0	100.0	100.0	100.0

[a] 1947-49 prices.

[b] Lines A-10 and B-9 differ because net foreign assets (line A-8) are not included in line B-9.

NOTES TO TABLE 15

Source: All table references below are to National Balance Sheet, Vol. II, unless otherwise specified.

Line A-1: Table VIII-a-1a, lines 1-5.
Line A-2: Table VIII-a-2a, lines 1-5.
Line A-3: Table VIII-a-1a and VIII-a-2a, lines 6 and 7.
Line A-4: Table VIII-a-4a, line 8.
Line A-5: Table VIII-a-6c, line 8.
Line A-6: Table VIII-a-5a, line 8.
Line A-7: Table VIII-a-7a, line 8.
Line A-8: National Wealth, Table A-45, first differences of col. 1 (bottom).
Line A-9: Table VIII-a-7a, line 9.
Line A-10: Sum of lines 7, 8, and 9 of this table.
Line B-1 through B-9: Table VIII-a-7a.

were fairly stable. The share of producer durables, on the other hand, and that of inventories and net foreign assets were considerably lower in the second and third cycles than in the first cycle. In this case, it is the high share in the first cycle that may be regarded as out of line, at least in the case of inventories and net foreign assets, as it reflected special conditions prevailing immediately after the war, namely, rapid refilling of civilian inventories and extraordinarily large foreign assistance by the federal government. In contrast, the share of military expenditures in total gross capital formation was much higher in the second and third than in the first cycle, a result of a change in the international situation.

With the exception of the share of the federal government, the distribution of gross capital formation among the main sectors during the postwar period has also been fairly stable, particularly between the second and third cycles. The share of the central government sector increased substantially, due exclusively to a sharp rise in the expenditures on durable military assets.

Comparison with Gross Capital Formation Before World War I

It is necessary now to inquire whether and how the volume and composition of gross capital formation during the postwar period differed from that observed before World War II. Since figures entirely comparable to our own estimates are not available before 1946, we must use slightly different statistics. Fortunately, the only long series that can be used, that of Simon Kuznets, comes very close to our own standard concept.[4]

It is then found that the ratio of domestic gross capital formation

[4] See Simon Kuznets, *Capital in the American Economy: Its Formation and Financing*, Princeton for NBER, 1961.

to gross national product, both expressed in current prices, did not fluctuate much between the 1870's and the 1920's if decadal averages are used to eliminate cyclical movements. The ratio, as Table 16 and Chart 5 show, is in all cases about one-fifth, using Kuznets' concept of

TABLE 16

TRENDS IN SHARE OF GROSS CAPITAL FORMATION IN GROSS NATIONAL PRODUCT, 1869-1958, CURRENT PRICES
(per cent)

		Gross Capital Formation (1)	Military Assets (2)	Net Foreign Assets (3)	Consumer Durables (4)	Total Including Military (5)	Total Excluding Military (6)
1.	1869-78	20.1		-1.3	6.9	25.7	25.7
2.	1879-88	20.1		-0.4	6.6	26.3	26.3
3.	1889-98	22.7		0.1	6.5	29.3	29.3
4.	1899-1908	22.4		1.0	6.4	29.8	29.8
5.	1909-18	19.5		2.4	6.7	28.6	28.6
6.	1919-28	19.7	0.5	1.6	8.6	30.4	29.9
7.	1929-38	14.5	0.5	0.5	7.8	23.3	22.8
8.	1939-48	14.8	5.5	1.0	7.5	28.8	23.3
9.	1949-55	21.4	2.3	-0.2	9.9	33.4	31.1
10.	1949-58[a]	18.8	4.0	0.3	9.1	32.2	28.2

Source

Numerator

Col. 1, lines 1-9: Unpublished worksheets underlying R tables in Appendixes A - E of Kuznets, Capital in the American Economy, minus the corresponding figures in col. 3 of this table.
Col. 1, line 10: Standard concept as defined in Table 12 excluding lines I-4, II-3, and III-5 (foreign sector).
Col. 2, lines 1-9: Unpublished worksheets underlying R tables (ibid.).
Col. 2, line 10: Same source as Table 12, lines III-6 to III-8.
Col. 3, lines 1-9: Unpublished worksheets underlying R tables (ibid.) and Table R-4, col. 4 (ibid.).
Col. 3, line 10: Same source as Table 12, lines I-4, II-3, and III-5.
Col. 4, lines 1-9: Unpublished worksheets underlying R tables (ibid.).
Col. 5, line 10: Same source as Table 12, line II-2.

Denominator

Cols. 1-4, lines 1-9: Unpublished worksheets underlying R tables (ibid.) and Table R-1, col. 9 (ibid.).
Cols. 1-4, line 10: Department of Commerce estimate of GNP.

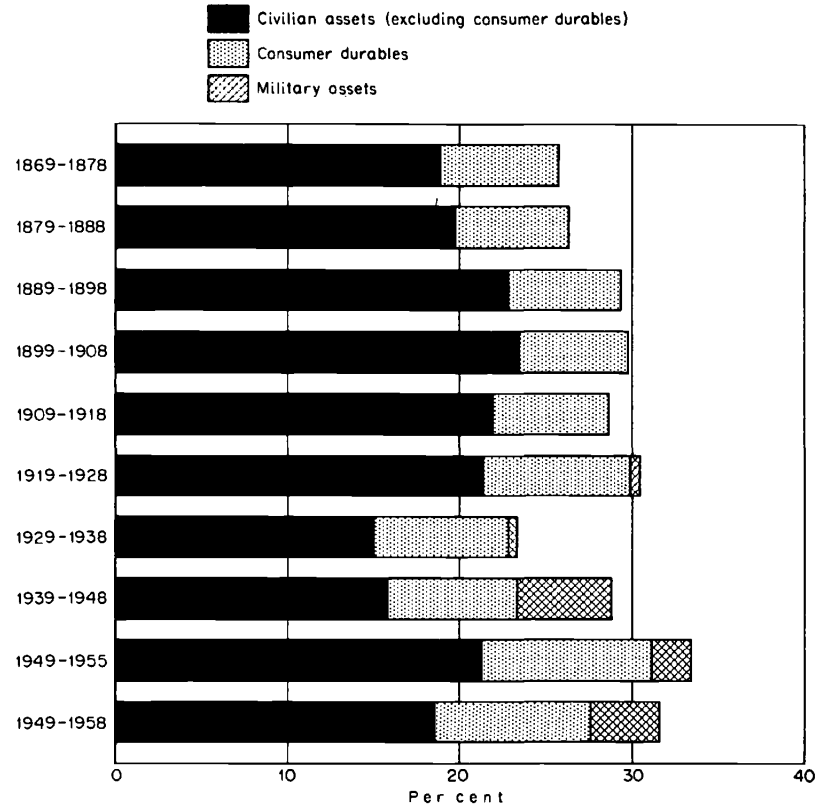
[a]These ratios differ slightly from those in Table 12, col. 5, because the denominator here does not include the adjustment for use value of consumer durables and government capital.

gross civilian capital formation. It is close to 30 per cent if allowance is made for consumer durable and military assets to make this series comparable to the broad concept of capital formation used for the postwar period.

The results of the comparison between this fairly stable level for the sixty years between 1869 and 1928 and the postwar period depend to

CHART 5

SHARE OF GROSS CAPITAL FORMATION
IN GROSS NATIONAL PRODUCT, 1869–1958



Source: Table 16.

some extent on the concept used. Under the broad concept, the average for the postwar period is virtually the same as that for the sixty years before the Great Depression. If consumer durables and military assets are excluded, the postwar average is slightly below the figure for most of the six decades before 1930.

The conclusion, therefore, is that if the broad concept of capital formation is used, no definite trend is evident in the share of gross capital formation in gross national product. The ratio has kept remarkably close to 30 per cent since about 1870 if the influence of business cycles, the war periods, and the 1930's are excluded. If the

narrower definition is used, there may have been a slight decline in the gross capital formation ratio, possibly from one-fifth in the first quarter of the twentieth century to about one-seventh before the 1950's. During the 1950's the share of gross capital formation excluding consumer durables and military assets was again about one-fifth of gross national product. The changes in the proportion, however, are rather small compared to the far-reaching changes that occurred in the same period in the size and structure of the American economy and in the financing of its growth. The relation of the American economy's financing task in the broadest sense to the greatly increased gross national product, i.e., the share of total gross output that must be set aside to finance capital formation and thus to form the basis for additions to national wealth, is very similar to what it was one, two and three generations ago. Within total financing there have, of course, been significant changes. Because the shares of government and consumer durables in gross capital formation increased, the financing of these two sectors became a relatively heavier task. Consequently, the financing of nonagricultural business, and still more of agriculture, became a lighter task relative to the country's total resources as measured by its gross national product.

Net Capital Formation

While the concept of gross capital formation is fairly clear-cut once the scope of capital assets is settled, the division of total capital expenditures into those that represent net capital formation, i.e., additions to the net stock of national wealth, and those that are needed to make good capital consumption, i.e., to keep the net stock of real wealth intact, is necessarily to some degree arbitrary because of the difficulty of calculating economically significant capital consumption allowances.

It is therefore fairly straightforward to say that gross capital formation is financed by gross saving plus net external financing, since gross capital expenditures and gross saving (internal financing is equal to current income less current expenditures) can be measured unequivocally within a system of business or national accounting.[5]

Although it may similarly be said that net capital formation is

[5] The sum of gross saving and net external financing of a unit, sector, or open national economy is, of course, not equal to gross capital formation, the difference representing the net increase or decrease in financial assets.

financed by external funds and by net saving, the estimation of the volume of net saving, and hence the financial distribution of that saving between external and internal funds, depends on the size of capital consumption allowances, the calculation of which is largely conventional. Furthermore, while net saving may be calculated informally in the same way, it has different meanings for business enterprises, on the one hand, and for households and the government, on the other. For the former, capital consumption allowances—and hence retained earnings—probably have some influence on investment and other business decisions. This influence, however, should not be overestimated. The entrepreneur in his calculations may not rely on the capital consumption allowances that appear in his books, but may make adjustments, probably implicitly rather than in exact figures, for changes in replacement cost, obsolescence, and other relevant factors. Secondly, while hardly any business keeps capital consumption allowances which it has not spent on replacement segregated in the form of liquid assets, entrepreneurs probably make some allowance in their financial planning for the expected cost of replacement, at least for the next few years. There is hardly any parallel to this in the operation of households and little in the management of government finances. Only few household and government units calculate depreciation on their tangible assets, and not many of them accumulate liquid assets in order to replace durable assets as they wear out. Certainly, no calculation or provision of this sort is made for the most important tangible asset—houses. For households and governments, therefore, net capital formation generally is not a motivationally important concept, and the separation of internal financing into capital consumption allowances and net saving is often not very meaningful.

For the entire economy, on the other hand, the distinction between gross and net capital formation is essential to measure the growth of the economy's stock of capital. We must, therefore, briefly review the volume and composition of net capital formation during the postwar period and compare it with earlier experience. In this review, the estimates of capital consumption allowances are based throughout on replacement cost and on standardized length-of-life assumptions in order to treat the different sectors of the economy and the different types of reproducible durable assets consistently, and to come as close as possible to an economically meaningful estimation of these allowances and net capital formation.

Estimates of net capital formation for the entire postwar period and

for the three business cycles within it are shown in Table 17 in current prices—where depreciation allowances are based on replacement cost—and in Table 18 in constant (1947–49) prices. The two tables, parallel to Tables 14 and 15 which are on a gross basis, show separate estimates for eight main types of capital expenditures in the upper part of the tables and for each of the seven main economic sectors in the lower part.

As in the case of gross capital formation, there are considerable differences between the first cycle, on the one hand, and the second and third cycles, on the other. These differences are particularly pronounced if military assets are included because net military capital formation in the first cycle was negative to an amount equal to almost two-fifths of civilian net capital formation so that all other shares in total capital formation are much higher than in civilian net capital formation.

Even if domestic civilian net capital formation is used as the basis, substantial changes in the composition remain. The share of residential structures is considerably higher in the second and third cycles than in the first cycle. A still sharper increase is shown in the shares of nonresidential private structures and of government structures, not only from the first to the second but also from the second to the third cycle.

This increase is offset by the decline in the share of equipment, which again is not limited to the comparison between the first and second cycle but continues from the second to the third cycle. The two main reasons for this decline are that the volume of expenditures on equipment increased more rapidly immediately after World War II than construction expenditures did, and depreciation allowances on equipment were fairly low in the first few postwar years because of the low level of expenditures during the war years and the 1930's.

The share of inventories in net capital formation shows no trend if the effects of price fluctuations are eliminated (Table 18). If, on the other hand, the calculation is based on the change in book values of inventories (Table 17)—an approach which is more appropriate in an analysis of financial problems—the average share is considerably higher, reflecting the general upward movement of commodity prices during the immediate postwar period; and there is a sharp decline from the first cycle to the second and third cycles.

The significance of net capital formation can be understood best when compared to total national output, in this case appropriately

TABLE 17

NET INVESTMENT IN CURRENT PRICES, 1946-58

	Annual Averages (billion dollars)				Distribution (per cent)							
	1946-49 (1)	1949-54 (2)	1954-58 (3)	1946-58 (4)	1946-49 (5)	1949-54 (6)	1954-58 (7)	1946-58 (8)	1946-49 (9)	1949-54 (10)	1954-58 (11)	1946-58 (12)
A. By type of wealth					BASED ON LINE A-10a				BASED ON LINE A-10b			
1. Residential structures	4.43	8.35	11.46	8.22	18.9	21.5	23.6	21.9	24.7	21.8	24.9	23.6
2. Other private structures	2.43	4.58	7.92	5.11	10.4	11.8	16.3	13.6	13.6	12.0	17.2	14.7
3. Government structures (civil)	0.51	3.72	6.45	3.86	2.2	9.6	13.3	10.3	2.8	9.7	14.0	11.1
4. Producer durables	7.66	6.97	6.58	6.74	32.7	18.0	13.6	17.9	42.7	18.2	14.3	19.4
5a. Gross inventories	7.48	4.91	5.22	5.94	32.0	12.7	10.8	15.8				
5b. Net inventories (value adjusted)	2.00	4.38	2.66	3.14					11.2	11.4	5.8	9.0
6. Consumer durables	8.15	8.44	7.86	7.87	34.8	21.8	16.2	20.9	45.5	22.1	17.1	22.6
7a. Total (incl. 5a)	30.66	36.97	45.49	37.74	131.0	95.3	93.7	100.3				
7b. Total (incl. 5b)	25.18	36.44	42.93	34.94					140.4	95.2	93.4	100.4
8. Net foreign assets	4.36	0.47	1.97	2.05	18.6	1.2	4.1	5.5	24.3	1.2	4.3	5.9
9. Military expenditures	-11.61	1.35	1.07	-2.18	-49.6	3.5	2.2	-5.8	-64.8	3.5	2.3	-6.3
10a. Total (7a + 8 + 9)[a]	23.41	38.79	48.53	37.61	100.0	100.0	100.0	100.0				
10b. Total (7b + 8 + 9)	17.93	38.26	45.97	34.81					100.0	100.0	100.0	100.0
B. By sector					BASED ON LINE B-8				BASED ON LINE B-9			
1. Nonfarm households	11.32	16.46	20.32	16.00	36.9	44.5	44.7	42.4	59.5	43.0	43.6	45.0
2. Nonfarm unincorp. business[b]	2.46	1.67	2.06	1.98	8.0	4.5	4.5	5.2	12.9	4.4	4.4	5.6
3. Agriculture[b]	3.49	1.48	0.92	2.04	11.4	4.0	2.0	5.4	18.3	3.9	2.0	5.7
4. Finance	0.09	0.14	0.17	0.13	0.3	0.4	0.4	0.3	0.5	0.4	0.4	0.4
5. Nonfinancial corporations[b]	12.92	12.64	15.17	13.29	42.2	34.2	33.3	35.2	67.9	33.0	32.6	37.4
6. State and local governments	0.76	3.75	6.75	4.03	2.5	10.1	14.8	10.7	4.0	9.8	14.5	11.3
7a. Federal government, civil	-0.39	0.84	0.10	0.28	-1.3	2.3	0.2	0.7				
7b. Federal govt., civil and military	-12.00	2.20	1.17	-1.90					-63.0	5.7	2.5	-5.3
8. Total, civil expenditures	30.65	36.98	45.49	37.75	100.0	100.0	100.0	100.0				
9. Total, civil and military expenditures[a]	19.04	38.34	46.56	35.57					100.0	100.0	100.0	100.0

Source: Same as in Table 14, except that Tables VIII-a-1b through VIII-a-7b and VIII-a-7e are used instead of VIII-a-1 through VIII-a-7 and VIII-a-7d of National Balance Sheet, Vol. II.

[a] Lines A-10a and B-9 differ because net foreign assets (line A-8) are not included in line B-9.

[b] The concept of inventory used here is the same as in line A-5a.

TABLE 18

NET INVESTMENT IN CONSTANT PRICES,[a] 1946-58

	Annual Averages (billion dollars)				Distribution (per cent)							
	1946-49 (1)	1949-54 (2)	1954-58 (3)	1946-58 (4)	1946-49 (5)	1949-54 (6)	1954-58 (7)	1946-58 (8)	1946-49 (9)	1949-54 (10)	1954-58 (11)	1946-58 (12)
A. By type of wealth					BASED ON LINE A-10							
1. Residential structures	4.54	7.28	8.99	6.99	26.4	21.9	24.4	23.7				
2. Other private structures	2.33	3.76	5.72	4.02	13.6	11.3	15.5	13.6				
3. Government structures (civil)	0.38	3.26	5.17	3.16	2.2	9.8	14.0	10.7				
4. Producer durables	7.90	5.98	4.74	5.84	46.0	18.0	12.9	19.8				
5. Inventories	1.90	3.74	2.09	2.75	11.1	11.3	5.7	9.3				
6. Consumer durables	8.38	8.06	7.85	7.86	48.8	24.3	21.3	26.6				
7. Total	25.43	32.08	34.56	30.62	148.0	96.6	93.7	103.6				
8. Net foreign assets	4.12	0.11	1.34	1.66	24.0	0.3	3.6	5.6				
9. Military expenditures	-12.37	1.01	0.98	-2.73	-72.0	3.0	2.7	-9.2				
10. Total[b]	17.18	33.20	36.88	29.55	100.0	100.0	100.0	100.0				
B. By sector						BASED ON LINE B-8				BASED ON LINE B-9		
1. Nonfarm households	11.63	14.94	17.43	14.57	45.7	46.6	50.4	47.6	89.1	45.2	49.0	52.2
2. Nonfarm unincorp. business	1.62	1.22	1.29	1.31	6.4	3.8	3.7	4.3	12.4	3.7	3.6	4.7
3. Agriculture	2.16	1.89	0.39	1.48	8.5	5.9	1.1	4.8	16.5	5.7	1.1	5.3
4. Finance	0.09	0.12	0.12	0.11	0.4	0.4	0.3	0.4	0.7	0.4	0.3	0.4
5. Nonfinancial corporations	9.85	9.76	9.76	9.59	38.7	30.4	28.2	31.3	75.4	29.5	27.5	34.4
6. State and local governments	0.70	3.29	5.42	3.35	2.8	10.3	15.7	10.9	5.4	9.9	15.3	12.0
7a. Federal government, civil	-0.61	0.85	0.14	0.21	-2.4	2.7	0.4	0.7				
7b. Federal govt., civil and military	-12.98	1.86	1.12	-2.52					-99.4	5.6	3.2	-9.0
8. Total, civil expenditures	25.44	32.07	34.55	30.62	100.0	100.0	100.0	100.0				
9. Total, civil and military expenditures[b]	13.07	33.08	35.53	27.89					100.0	100.0	100.0	100.0

Source: Same as in Table 15, except that Tables VIII-a-1c through VIII-a-7c are used instead of Tables VIII-a-1a through VIII-a-7a of National Balance Sheet, Vol. II.

[a] 1947-49 prices.

[b] Lines A-10 and B-9 differ because net foreign assets (line A-8) are not included in line B-9.

represented by net national product. The necessary figures are also shown in Table 19. For the postwar period as a whole, net capital formation was equal to about one-eighth of net national product, regardless of whether military assets are included. The movements of this ratio during the period, however, differ considerably, depending on whether the calculation is based on civilian or total capital formation. According to the former calculations, there was no significant movement in the ratio from the first to the second or from the second to the third cycle. If military assets are included, the pattern is different. The share for the second and third cycles equaled one-seventh of net national product and was higher than that for the first cycle when it stood at only 10 per cent. The difference, of course, arises because net military capital formation was heavily negative in the first period, when current expenditures on new military durables were far below the depreciation allowances calculated on the huge stock of such durables in existence at the end of World War II, while net military capital formation was positive, although only to the extent of about $1 billion a year, during the second and third cycles.

As in the case of gross capital formation, it is well to obtain some historical perspective by comparing the ratio of net capital formation to net national product observed in the postwar period with similar ratios for earlier periods. It is then found that this ratio averaged about one-seventh in the three decades ending in 1929, compared to one-eighth in the postwar period. The decline is actually somewhat larger, since the 1901–29 period includes World War I, during which net capital formation was low. If these years are excluded to make the period comparable to the postwar period, the ratio rises to one-seventh for the two periods 1901–12 and 1920–29. It therefore appears that there has been a downward shift in the ratio between the nonwar periods of the first three decades of the century and the postwar period.

No parallel to this movement was found in the ratio of gross capital formation to gross national product. The difference reflects the fact that the proportion of capital consumption allowances to gross capital formation has increased. To put it otherwise, a smaller proportion of gross capital formation now becomes an addition to the net stock of national wealth, which reflects the shorter average life of gross capital formation in the postwar period due to an increase in the share of producer and consumer durables compared to long-lived structures.

TABLE 19

TRENDS IN SHARE OF NET CAPITAL FORMATION IN NET NATIONAL PRODUCT, 1869-1958, REPLACEMENT COST DEPRECIATION
(per cent)

	Net Civilian Capital Formation (1)	Military Assets (2)	Net Foreign Assets (3)	Consumer Durables (4)	Total Including Military (5)	Total Excluding Military (6)
1. 1869-78	13.1		-1.4	7.5	19.2	19.2
2. 1879-88	12.5		-0.4	7.2	19.3	19.3
3. 1889-98	13.7		0.2	7.3	21.2	21.2
4. 1899-1908	13.5		1.1	1.6	16.2	16.2
5. 1909-18	9.6		2.7	0.8	13.1	13.1
6. 1919-28	10.0	-0.5	1.8	1.4	12.7	13.2
7. 1929-38	1.8	0	0.5	-0.3	2.0	2.0
8. 1939-48	3.1	2.8	1.2	1.9	9.0	6.2
9. 1949-55	8.8	-1.2	-0.3	2.7	10.0	11.2
10. 1949-58	10.0	0.3	0.4	2.5	13.2	12.9

Source

Numerator

Col. 1, lines 1-9: Unpublished worksheets underlying R tables in Appendixes A - E of Kuznets, Capital in the American Economy, minus the corresponding figures in col.3 of this table.

Col. 1, line 10: Table 16, col. 1, line 10, minus depreciation at replacement cost of construction, producer durables, and government civil capital formation (the difference between lines 8 in Table VIII-a-7 and VIII-a-7b minus the difference between lines 8 in Tables VIII-a-5 and VIII-a-5b of National Balance Sheet, Vol. II).

Col. 2, lines 1-9: Unpublished worksheets underlying R tables (Kuznets, Capital in the American Economy).

Col. 2, line 10: Table 16, col. 2, line 10, minus depreciation at replacement cost of military capital expenditure (the difference between lines 9 in Tables VIII-a-7 and VIII-a-7b of National Balance Sheet, Vol. II).

Col. 3: Same as Table 16, col. 3.

Col. 4, lines 1-3: Same as Table 16, col. 4, lines 1-3. (No data for replacement cost depreciation are available.)

Col. 4, lines 4-8: Table 16, col. 4, minus depreciation at replacement cost. (For depreciation at replacement cost, see Goldsmith, Study of Saving, Vol. I, Table Q-9, col. 1; Table A-28, col. 1; and Table A-29, col. 5.)

Col. 4, lines 9-10: Table 16, col. 4, line 10, minus depreciation on consumer goods at replacement cost (the difference between lines 8 in Tables VIII-a-5 and VIII-a-5b of National Balance Sheet, Vol. II).

Denominator

Cols. 1-6, lines 1-9: Unpublished worksheets underlying R tables (Kuznets, Capital in the American Economy) and Table R-1, col. 6 (ibid.).

Cols. 1-6, line 10: GNP figures as given in Table 16, line 10, minus depreciation at replacement cost of construction, producer durables, and government capital formation (the difference between lines 10 in Tables VIII-a-7 and VIII-a-7b minus the difference between lines 8 in Tables VIII-a-5 and VIII-a-5b of National Balance Sheet, Vol. II).

The changes in the composition of net capital formation (Table 20) are considerably larger than those in the gross figures. This is the result of differences in the level and changes in the ratio of capital consumption to gross capital expenditures among different types of capital expenditures.

Residential structures represent the most important single type of

TABLE 20

NET CAPITAL EXPENDITURES IN CONSTANT[a] PRICES, 1901-58

	Residential Structures (1)	Nonresidential Structures: Private (2)	Nonresidential Structures: Government (3)	Producer Durables (4)	Inventories (5)	Consumer Durables (6)	Total (7)	Monetary Metals (8)	Total Incl. Monetary Metals (9)
			I. AGGREGATES (BILLION DOLLARS)						
1901-12	34.0	33.5	11.5	17.5	5.0	11.0	112.5	1.4	113.9
1913-22	28.6	18.0	7.2	11.3	18.7	5.1	88.9	3.4	92.3
1923-29	61.8	27.4	16.3	11.4	7.6	19.5	144.0	0.4	144.4
1930-39	-10.5	-16.2	22.0	-7.0	-2.4	0.3	-13.8	11.5	-2.3
1940-45	-5.0	-10.6	3.1	12.3	12.3	3.7	15.8	3.3	19.1
1901-45	108.9	52.1	60.1	45.5	41.2	39.6	347.4	20.0	367.4
1946-58	92.8	52.2	39.2	76.0	35.7	102.1	398.0	1.0	399.0
1901-29	124.4	78.9	35.0	40.2	31.3	35.6	345.4	5.2	350.6
			II. ANNUAL AVERAGES (BILLION DOLLARS)						
1901-12	2.83	2.79	0.96	1.46	0.42	0.92	9.38	0.12	9.49
1913-22	2.86	1.80	0.72	1.13	1.87	0.51	8.89	0.34	9.23
1923-29	8.83	3.91	2.33	1.63	1.09	2.79	20.58	0.06	20.63
1930-39	-1.05	-1.62	2.20	-0.70	-0.24	0.03	-1.38	1.15	-0.23
1940-45	-0.83	-1.77	0.52	2.05	2.05	0.62	2.63	0.55	3.18
1901-45	2.42	1.16	1.34	1.01	0.92	0.88	7.72	0.44	8.16
1946-58	7.14	4.02	3.02	5.84	2.75	7.86	30.62	0.08	30.69
1901-29	4.29	2.72	1.21	1.39	1.08	1.23	11.91	0.18	12.09

(continued)

TABLE 20 (concluded)

	Residential Structures (1)	Nonresidential Structures: Private (2)	Nonresidential Structures: Government (3)	Producer Durables (4)	Inventories (5)	Consumer Durables (6)	Total (7)	Monetary Metals (8)	Total Incl. Monetary Metals (9)
				III. DISTRIBUTION (PER CENT)					
1901-12	30.2	29.8	10.2	15.6	4.4	9.8	100.0	1.2	101.2
1913-22	32.2	20.2	8.1	12.7	21.0	5.7	100.0	3.8	103.8
1923-29	42.9	19.0	11.3	7.9	5.3	13.5	100.0	0.3	100.3
1930-39[b]	-76.1	-117.4	159.4	-50.7	-17.4	2.2	-100.0	83.3	-16.7
1940-45	-31.6	-67.1	19.6	77.8	77.8	23.4	100.0	20.9	120.9
1901-45	31.3	15.0	17.3	13.1	11.9	11.4	100.0	5.8	105.8
1946-58	23.3	13.1	9.8	19.1	9.0	25.7	100.0	0.3	100.3
1901-29	36.0	22.8	10.1	11.6	9.1	10.3	100.0	1.5	101.5

Source

1901-45: Goldsmith, National Wealth, Table A-6 (first differences).
1946-58, col. 1: National Balance Sheet, Vol. II, Table VIII-a-1c, line 8.
1946-58, col. 3: Ibid., Table VIII-a-2c, lines 6 and 7.
1946-58, cols. 2, 4-6: Table 18.
1946-58, col. 8: Goldsmith, National Wealth, Table A-6 (first differences).

[a] 1947-49 prices.

[b] The signs have been reversed to match the sign of the numerator.

capital expenditures on the net, as well as the gross, basis; for 1901–29, they accounted on the average for more than one-third of total net capital formation against hardly one-quarter in the postwar period 1946–58. Similarly, the share of private nonresidential structures averaged only one-eighth during the postwar period against nearly one-quarter in 1901–29. Inventories and government civilian structures accounted for about the same proportion in both periods. Sharp increases are observed, on the other hand, in the share of equipment, both for producers and consumers.

From the point of view of finance, these changes in the composition of net capital formation mean that the share of relatively short-lived assets—producer durables, consumer durables, and inventories—increased from three-tenths to over one-half of total net capital formation between the first three decades of this century and the postwar period. This, in turn, implies an increased ratio of capital consumption allowances to gross capital formation and means that a smaller fraction of total gross capital formation needs to be financed by retained net earnings, net saving, or external financing. If we assume that residential structures and consumer durables must be financed by households while private nonresidential structures, producer durables, and inventories are financed by business, the share of the three main sectors in total net capital formation was about the same during the postwar period as it had been from 1901 to 1929. Households accounted for close to one-half of total net capital formation, business for slightly over two-fifths, and government for about one-tenth. These ratios are based on civilian net capital formation. If military assets are included, the government share was considerably lower in the postwar period than it had been in the first three decades of the century, and the shares of both households and business were higher in the postwar period than formerly.