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COMMODITY FLOW AND CAPITAL FORMATION IN THE RECENT RECOVERY AND DECLINE, 1932-1938*

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ANNUAL ESTIMATES of commodity flow and capital formation for 1919-35 were summarized in *National Income and Capital Formation*. Their derivation and the underlying data were described in detail in *Commodity Flow and Capital Formation*, Volume One. This *Bulletin* brings the preliminary measures through 1938 and analyzes briefly the shares that changes in the flow of various commodity groups and in the components of capital formation contributed to the rise in the economy's total product during the recent expansion of 1932 to 1937 and to the decline from 1937 to 1938.

1. SCOPE AND MEANING OF THE ESTIMATES

Table 1 presents preliminary estimates of commodity flow and capital formation for the seven years, 1932-38. For 1932-33 they are identical with those already published, except for a minor reclassification noted below and a minor revision of the measures for public construction. The published estimates for 1934 and 1935 have been revised by taking into account data that have become available since the publication by the National Bureau in 1937 and 1938 of the two volumes mentioned above; but the revisions have, on the whole, been minor. The estimates for 1936-38 are based on data similar to those from which the preliminary estimates for 1934 and 1935 were originally derived. The data and methods used in preparing the estimates for the recent years are described in detail in the Appendix to this *Bulletin*.

We indicate briefly the meaning of the various categories and totals. The estimates of the flow of perishable, semidurable, and consumers' durable commodities to households and individual consumers (lines 1, 2, and 3 of Table 1) are approximations of their cost to ultimate consumers in the United States. The totals in line 5 are similarly approximations of the cost of producers' durable commodities, except that the ultimate recipients are not households or individual consumers but economic enterprises. The distinction among perishable, semidurable, and durable commodities is based on the duration of life in ultimate use: less than six months for perishable, from six months to three years for semidurable, and over three years for durable. The distinction between producers' and consumers' durable is based on the characteristics of the chief user, no attempt being made to segregate the fraction of a preponderantly consumers' commodity that is sold to business enterprises or of a preponderantly business good that is sold to households or individual consumers.

The three estimates of construction (lines 4, 6, and 8) relate to new construction alone, but include such major repairs and alterations in private construction as require building permits. The basis of valuation is cost of construction, exclusive of such additions as may be involved in the sale of the structure to the ultimate user. Residential construction includes both urban and farm dwellings. Business construction comprises industrial, commercial, recreational and social structures, and farm construction other than dwellings, as well as public utility construction. Public construction comprises highways, streets, bridges, etc., as well as governmental buildings for educational, administrative, or other purposes.

Net flow to inventories is an approximation of the value of commodities added to or subtracted from total business inventories. It is essentially a measure of *commodity flow*, not of *change in values*, and is derived from a comparison of inventories that have been adjusted for changes in value and thus represent commodity totals at comparable price levels; only after such adjustment are the net differences converted back to current price levels. Net addition to claims against foreign countries is self-explanatory: the addition to the capital in the country resulting from the international flow of commodities and services.

The present estimates of the net flow to inventories and net addition to claims against foreign countries differ somewhat in scope from those in the two books mentioned above. This difference results from a decision not to segregate an item formerly treated separately, the net change in stocks of monetary metals. The decision, made largely in order to simplify analysis, meant that the item had to be distributed among other categories. Such changes in the gold stock of the country as resulted from the inflow and outflow of gold (the preponderant share of the total change in monetary metals) have been transferred to the net addition to claims against foreign countries; and thus offset any changes in these claims that arise from the international movement of gold. Consequently, the entries in line 9 reflect the effect

* The estimates presented in this *Bulletin*, as well as the Appendix describing sources and methods used, have been prepared under the immediate direction of William H. Shaw, with the assistance of David L. Rolbein. The author is indebted to Mr. Shaw for valuable aid throughout the preparation of this *Bulletin*; and to Milton Friedman and Moses Abramovitz for helpful suggestions in revising the original draft.

TABLE 1

Commodity Flow and Capital Formation, 1932-1938

(millions of dollars)

TOTALS AND COMPONENTS	CURRENT PRICES							1929 PRICES						
	1932 [1]	1933 [2]	1934 [3]	1935 [4]	1936 [5]	1937 [6]	1938 [7]	1932 [8]	1933 [9]	1934 [10]	1935 [11]	1936 [12]	1937 [13]	1938 [14]
Gross Commodity Product														
1 Flow of perishable commodities	18,147	18,133	20,756	23,095	25,363	26,706	25,502	26,342	27,325	26,920	26,215	28,691	29,060	31,522
2 Flow of semidurable commodities	6,722	6,513	7,512	8,151	9,200	9,720	8,992	9,742	8,872	9,206	10,176	11,344	11,109	11,310
3 Flow of consumers' durable commodities	3,806	3,882	4,686	5,918	7,342	7,664	5,410	4,704	4,645	5,283	6,882	8,547	8,250	5,647
4 Residential construction	444	392	458	923	1,580	1,956	1,746	600	548	595	1,193	1,965	2,193	1,949
5 Flow of producers' durable commodities	2,019	2,051	3,138	3,957	5,429	6,828	5,164	2,601	2,779	3,811	4,583	6,080	6,987	5,243
6 Business construction	1,097	936	1,180	1,463	1,854	2,555	1,952	1,332	1,166	1,404	1,742	2,104	2,726	2,123
7 Net flow to inventories	−2,419	−1,138	−1,699	+1,170	+1,994	+3,337	−314	−3,222	−1,795	−2,243	+1,204	+2,219	+3,368	−366
8 Public construction	1,869	1,383	2,100	1,995	3,265	2,889	3,455	2,334	1,616	2,273	2,195	3,339	2,957	3,760
9 Net addition to claims against foreign countries	+51	+125	+349	−153	−305	−68	+741	+75	+181	+444	−182	−360	−75	+898
10 Gross commodity product (1 through 9)	31,736	32,277	38,480	46,519	55,722	61,587	52,648	44,508	45,337	47,693	54,008	63,929	66,575	62,086
11 Flow of consumers' commodities (1+2+3)	28,675	28,528	32,954	37,164	41,905	44,090	39,904	40,788	40,842	41,409	43,273	48,582	48,419	48,479
12 Gross capital formation (4 through 9)	3,061	3,749	5,526	9,355	13,817	17,497	12,744	3,720	4,495	6,284	10,735	15,347	18,156	13,607
13 Capital formation for business use (5+6+7)	697	1,849	2,619	6,590	9,277	12,720	6,802	711	2,150	2,972	7,529	10,403	13,081	7,000
14 Capital formation for business use, excl. intories (5+6)	3,116	2,987	4,318	5,420	7,283	9,383	7,116	3,933	3,945	5,215	6,325	8,184	9,713	7,366
15 Private durable capital formation (4+5+6)	3,560	3,379	4,776	6,343	8,863	11,339	8,862	4,533	4,493	5,810	7,518	10,149	11,906	9,315
16 Nondurable commodities (1+2)	24,869	24,646	28,268	31,246	34,563	36,426	34,494	36,084	36,197	36,126	36,391	40,035	40,169	42,832
17 Durable commodities and construction (3+4+5+6+8)	9,235	8,644	11,562	14,256	19,470	21,892	17,727	11,571	10,754	13,366	16,595	22,035	23,113	18,722
Net Commodity Product														
18 Net residential construction	−1,382	−1,360	−1,415	−930	−354	−202	—	−1,867	−1,899	−1,838	−1,214	−441	−226	—
19 Net flow of producers' durable and net business construction	−2,084	−1,934	−817	121	1,706	3,148	—	−2,600	−2,370	−928	163	1,915	3,276	—
20 Net public construction	1,321	801	1,452	1,309	2,483	1,967	—	1,638	894	1,518	1,407	2,463	2,006	—
21 Net commodity product (7+9+11+18+19+20)	24,163	25,022	30,824	38,681	47,429	52,272	—	34,812	35,853	38,362	44,651	54,378	56,768	—
22 Net capital formation (7+9+18+19+20)	−4,513	−3,506	−2,130	1,517	5,524	8,182	—	−5,976	−4,989	−3,047	1,378	5,796	8,349	—
23 Net capital formation for business use (7+19)	−4,503	−3,072	−2,516	1,291	3,700	6,485	—	−5,822	−4,165	−3,171	1,367	4,134	6,644	—
24 Net private durable capital formation (18+19)	−3,466	−3,294	−2,232	−809	1,351	2,946	—	−4,467	−4,269	−2,766	−1,051	1,474	3,050	—

of the international flow of commodities and services, but not of gold. The changes in the stock of monetary metals that remained after the exclusion of these gold movements were added to the net flow to inventories.[1]

The nine components just described are presented in Table 1 in both current and 1929 prices; for some, both gross and net values are given; and the components are combined into totals of various descriptions. The adjustments for price changes are described in Volumes 32 and 34 and in the Appendix to this *Bulletin*. The only comment needed here is that the results of this adjustment, the estimates in 1929 prices are, for all items except net flow to inventories, necessarily somewhat cruder approximations than the estimates in current prices. The transition from gross to net values for components of capital formation is made with the help of estimates of capital consumption. These were prepared by Solomon Fabricant and are described in detail in his *Capital Consumption and Adjustment;* for the more recent years they are results of approximations described in the Appendix to this *Bulletin*. The distinction between gross value, i.e., the gross flow of a certain group of finished commodities to their ultimate users, and net value, i.e., the net addition to the stock of such finished commodities in the hands of their ultimate users, needs no further comment. However, annual consumption of producers' durable commodities cannot be estimated separately from that of business construction. Hence these two components, whose gross values can be segregated, have to be treated as one to derive the net value.

The totals into which the components are combined deserve some discussion; especially the pair of totals which, in subsequent analysis, is the most important—gross and net commodity product.

The meaning of these two magnitudes can perhaps be best brought out by comparing them with the more familiar totals of gross national product and net national product or national income. Gross national product is the value of all commodities and services produced during the year, excluding all duplication between raw materials and finished products (or services and commodities that embody them) except that the value of durable capital consumed during the year is not subtracted. Gross national product is thus the value of all *finished* commodities that reach their ultimate users (including producers' durable equipment), plus changes in inventories and in claims against foreign countries, and plus the value of all services not embodied in new commodities. Net national product or national income is the value of all commodities and services produced during the year, without any duplications; or the value of all finished consumers' commodities reaching their ultimate users during the year, plus changes in inventories and in claims against foreign countries, plus changes in the net stock of producers' durable equipment in the hands of enterprises using it, plus the value of all services not embodied in new commodities.

The basic difference between gross *commodity* product and gross *national* product is that the former excludes and the latter includes the value of all services rendered during the year but not embodied in new commodities; this item 'services not embodied in new commodities' is also the difference between the larger total, national income, and the smaller total, net commodity product.[2] The services thus excluded from commodity product are exemplified by direct services of professional practitioners to ultimate consumers (physicians, dentists, teachers, lawyers, etc.); direct services of certain capital goods to ultimate consumers (e.g., of residential real estate to residents); services involved in the repair and maintenance of existing commodities, but not in the construction of new ones. For 1919-35, these services not embodied in new commodities accounted for about 25 per cent of gross national product and for about 28 per cent of net national product or national income. Thus, gross commodity product must have averaged about 75 per cent of gross national product, and net commodity product about 72 per cent of national income.

The most important breakdown of commodity product for our purposes is between consumers' outlay on commodities, which comprises the flow of the three groups of consumers' commodities, and capital formation, which comprises the other components in Table 1. Consumers' outlay on commodities is self-explanatory: it is the total spent in the purchase of perishable, semidurable, or durable commodities; or the value of commodities and services that became embodied in such new perishable, semidurable, and durable commodities as flowed from business enterprises to ultimate consumers during the year. Capital formation, a somewhat less familiar concept, is the value of commodities and services produced during the year that became embodied in additions to inventories, to capital equipment (including construction), and to claims against foreign countries. If the addition to capital equipment is on a gross basis, i.e., the annual consumption of that equipment is not deducted, the resulting total is gross capital formation. If the addition to capital equipment is on a net basis, the resulting total is net capital formation.

If we disregard the net flow to inventories and net addition to claims against foreign countries, two items that cannot easily be broken down by the durability of the goods that enter into them, the rest of gross commodity product can be subdivided between nondurable commodities on the one hand and durable commodities and construction on the other. Such a dichotomy is, however, not useful for net commodity product, since it would mean combining in the durable group items of gross value (consumers' durable) with items of net value.

Most of the components rose continuously from 1932 or

[1]Items needed to make the new categories comparable with those in the earlier publications are provided in the Appendix.

[2]Gross and net commodity product include, however, a small part of services not embodied in new commodities, namely, the part that enters the balance of international payments and hence enters the net addition to claims against foreign countries. But the part thus included is so small as compared with total services not embodied in new commodities that the statement in the text is justified. It is also so small compared with the value of commodities included in gross and net commodity product that the adjective 'commodity' seems justified.

1933 to 1937. In several components and in some of the totals the rise is not evident until after 1933, so that the latter year, rather than 1932, marks the trough of the preceding contraction. In one important item, the flow of perishable commodities, the adjustment for price changes reveals that the rise from 1933 to 1935 was due entirely to a rise in prices; and that quantity volumes did not rise until after 1935. But by and large the impression conveyed by Table 1 is that expansion was fairly general and vigorous through 1937. Only one component declined—the net addition to claims against foreign countries. But it is not unusual for the net result of international transactions in commodities and services to become negative during periods of vigorous expansion in an industrialized country, when imports of commodities and the value of services consumed by tourists tend to rise more than exports of commodities and services.[3]

Since the comprehensive totals of gross and net commodity product rise after 1932, we accept this year as marking the trough of the preceding contraction and the initial year of the expansion that developed later. The preliminary 1938 data indicate a significant decline from 1937 levels. Therefore, we may say that the expansion of activity evident in Table 1 culminated in 1937.

The movement of the series in Table 1 suggests also that the whole period 1932-37 may be treated as a single period of expansion. The chief reason is that the most comprehensive measure of the country's activity available in our estimates—gross and net commodity product—shows a trough in 1932, then a sustained rise to a peak in 1937. True, the flow of perishable commodities, in 1929 prices, suggests a decline from 1933 to 1935; and the study of monthly, rather than annual series, might reveal additional swings within the period, especially immediately before or after the NRA. But the annual estimates in Table 1 fail to reveal a decline that interrupts the rise to 1937 sufficiently to make possible the assumption of more than one expansion during the period.

2. Distribution of the Rise in Commodity Product Among Changes in Its Components

In attempting to analyze the rise in commodity product from 1932 to 1937 we so treat the changes in its components as to establish their share in the expansion of gross and net commodity product. Accordingly, we try first to measure the participation of each component or subtotal in the rise in total commodity product. This is readily done by establishing the total rise in commodity product during the expansion, ascertaining the changes in each component or subtotal, and computing their relative share of the total rise in commodity product.

Such percentage distributions are presented in Table 2 (col. 1, 2, and 3 for values in current prices, and 8, 9, and 10 for values in 1929 prices). Since we wish to account for the rise in commodity product during a fixed period, the changes in the components and subtotals are estimated during the same interval. We are concerned here not with the magnitude or timing of the recent expansion as it has been observed in each category of goods distinguished, but with the change in the various components or subtotals during the years for which commodity product showed the sustained rise that marked the period as one of expansion in general economic conditions.

But while the period is thus fixed, we can measure the rise in commodity product and the changes in its components not only from 1932 to 1937, but also as between averages covering more than one year. Thus Table 2 provides a percentage distribution of the rise in commodity product not only from 1932 to 1937, but also between the average value for 1932-33 and for 1936-37; and between the average value for 1932-34 and for 1935-37. The use of such averages reduces any irregular changes that may affect the single year values of 1932 and 1937; damps the effect on the percentage distribution of differences in the timing of the expansion in the various components; and reduces the amplitude of the rise in both total commodity product and its components.[4]

Columns 1-3 and 8-10 show how important was the change in each component or in each subtotal in the rise in gross and net commodity product during the recent expansion. These percentages speak for themselves, but two observations may be made. The first is that the shift in the period for which percentage distributions are computed produces but insignificant differences in them, for values in current prices (col. 1, 2, and 3). The differences are somewhat more pronounced for values in 1929 prices: passing from a comparison of 1932 with 1937 to a comparison of 1932-34 with 1935-37 reduces the relative share of changes in the flow of perishable and of producers' durable commodities, and increases that of changes in the flow of semidurable and consumers' durable commodities, residential and public construction. Second, the adjustment for price changes reduces strikingly the share in the rise in commodity product of changes in the flow of perishable commodities and (to a somewhat smaller extent) in semidurable commodities, and raises correspondingly the percentage share of changes in the other components. This reflects a greater rise during the recent expansion, compared with most pronounced cyclical expansions in the past, in prices of perishable and semidurable commodities than in prices of durable commodities or in construction costs.

Of the $30 billion rise in gross commodity product in current prices from 1932 to 1937, about half was contributed by the rise in gross capital formation and half by the rise in the flow of consumers' commodities; similar percentages for values in constant prices were 65 and 35; net capital formation contributed 45

[3] The decline has perhaps been intensified by the economic policies adopted by the totalitarian states in recent years.

[4] It might have been preferable to compute the percentage distribution not of the algebraic change in commodity product, but of the sum of the rises in the components that did show an expansion during the period. But for the years under analysis, the difference between the algebraic increase in commodity product and the total of all positive changes is minor. Where a simple algebraic total can be used, the use of a total of all positive changes would involve several totals, as the number of components and subtotals and their identity varied.

TABLE 2

Distribution of Changes in Commodity Product among Changes in its Components
Expansion of 1932-1937 compared with Earlier Expansions

Totals and Components	Current prices: Change from 1932 to 1937 [1]	Current prices: Change from 1932-33 av. to 1936-37 av. [2]	Current prices: Change from 1932-34 av. to 1935-37 av. [3]	Current prices: Change from 1921 to 1929 [4]	Current prices: Change from 1921-22 av. to 1928-29 av. [5]	Current prices: Change from 1921-23 av. to 1927-29 av. [6]	Current prices: Av. change during 4 reference expansions [7]	1929 prices: Change from 1932 to 1937 [8]	1929 prices: Change from 1932-33 av. to 1936-37 av. [9]	1929 prices: Change from 1932-34 av. to 1935-37 av. [10]	1929 prices: Change from 1921 to 1929 [11]	1929 prices: Change from 1921-22 av. to 1928-29 av. [12]	1929 prices: Change from 1921-23 av. to 1927-29 av. [13]	1929 prices: Av. change during 4 reference expansions [14]
Part A Gross Commodity Product														
A Change in gross commodity product (millions of dollars)	29,851	26,648	20,445	22,302	18,973	14,439	8,713	22,067	20,330	15,658	25,548	21,382	16,329	6,249
Percentage distribution of total A among changes in:														
1 Flow of perishable commodities	28.7	29.6	29.6	29.1	32.8	37.3	25.2	12.3	10.0	7.2	25.2	25.2	29.0	20.7
2 Flow of semidurable commodities	10.0	10.7	10.3	12.0	12.7	12.7	13.8	6.2	9.4	10.2	16.5	20.5	17.2	10.6
3 Flow of consumers' durable commodities	12.9	13.7	13.9	19.4	19.3	19.2	16.8	16.1	18.3	19.3	20.8	21.2	22.2	21.0
4 Residential construction	5.1	5.1	5.2	3.4	4.0	3.7	1.4	7.2	7.4	7.7	3.1	2.9	3.1	0.6
5 Flow of producers' durable commodities	16.1	15.4	14.7	13.4	13.1	11.9	10.0	19.9	18.9	18.0	14.1	13.6	13.7	14.7
6 Business construction	4.9	4.5	4.3	10.7	10.5	11.9	7.0	6.3	5.7	5.7	9.2	8.8	10.4	6.8
7 Net flow to inventories	19.3	16.7	19.2	10.3	3.7	—2.7	30.3	29.9	26.1	29.9	9.8	4.4	—1.0	33.5
8 Public construction	3.4	5.4	4.6	5.6	5.5	6.8	2.6	2.8	5.8	4.8	4.8	4.8	6.2	1.4
9 Net addition to claims against foreign countries	—0.4	—1.0	—1.7	—4.0	—1.7	—0.9	—7.2	—0.7	—1.7	—2.8	—3.4	—1.4	—0.8	—9.3
10 Gross commodity product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
11 Flow of consumers' commodities	51.6	54.0	53.8	60.5	64.8	69.2	55.8	34.6	37.8	36.7	62.5	66.9	68.4	52.2
12 Gross capital formation	48.4	46.0	46.2	39.5	35.2	30.8	44.2	65.4	62.2	63.3	37.5	33.1	31.6	47.8
13 Capital formation for business use	40.3	36.5	38.2	34.4	27.4	21.1	47.3	56.1	50.7	53.6	33.1	26.8	23.1	55.0
14 Capital formation for business use excl. inventories	21.0	19.8	19.0	24.1	23.7	23.8	17.0	26.2	24.6	23.7	23.3	22.4	24.1	21.5
15 Private durable capital formation	26.1	24.9	24.2	27.5	27.6	27.5	18.4	33.4	32.0	31.4	26.4	25.4	27.2	22.1
16 Nondurable commodities	38.7	40.3	39.9	41.1	45.5	50.0	39.0	18.5	19.5	17.4	41.7	45.7	46.2	31.3
17 Durable commodities and construction	42.4	44.1	42.7	52.5	52.4	53.5	37.8	52.3	56.1	55.5	52.0	51.3	55.6	44.5
Part B Net Commodity Product														
B Change in net commodity product (millions of dollars)	28,109	25,258	19,457	19,891	16,679	12,628	7,693	21,956	20,240	15,590	23,128	19,258	14,602	5,667
Percentage distribution of total B among changes in:														
18 Net residential construction	4.2	4.3	4.6	0.9	0.9	0.3	—1.8	7.5	7.7	8.0	0.8	0.4	0.2	—1.3
19 Net flow of producers' durable commodities and net business construction	18.6	17.6	16.8	18.8	17.9	18.1	10.0	26.8	25.1	24.1	18.7	18.1	19.5	16.1
20 Net flow to inventories	20.5	17.6	20.1	11.6	4.2	—3.0	34.4	30.0	26.2	30.0	10.8	4.9	—1.1	36.9
21 Net public construction	2.3	4.6	3.7	5.3	5.3	6.7	2.2	1.7	4.8	3.9	4.4	4.0	5.8	1.0
22 Net addition to claims against foreign countries	—0.4	—1.1	—1.8	—4.5	—1.9	—1.0	—8.1	—0.7	—1.7	—2.8	—3.7	—1.6	—0.9	—10.2
23 Net commodity product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
24 Flow of consumers' commodities	54.8	57.0	56.5	67.8	73.7	79.0	63.4	34.8	38.0	36.9	69.1	74.3	76.5	57.6
25 Net capital formation	45.2	43.0	43.5	32.2	26.3	21.0	36.6	65.2	62.0	63.1	30.9	25.7	23.5	42.4
26 Net capital formation for business use	39.1	35.2	36.9	30.4	22.1	15.1	44.4	56.8	51.3	54.1	29.5	23.0	18.4	53.0
27 Net private durable capital formation	22.8	21.9	21.4	19.7	18.7	18.4	8.2	34.2	32.8	32.0	19.5	18.5	19.7	14.8

per cent of the rise in net commodity product in current prices and 65 per cent of the rise in 1929 prices. But perhaps greater interest attaches to a comparison of the percentage distribution for the recent expansion with that for earlier expansions. Are the shares of changes in various components and subtotals in the rise in commodity product during the recent expansion similar to those in earlier cyclical rises, or have any substantial differences developed?

The available estimates go back only to 1919 and it is, at present, impossible to provide measures similar to those in columns 1-3 and 8-10 of Table 2 for a considerable number of cyclical expansions. But even a period as short as that since 1919 affords a background against which the composition of the rise in commodity product during the recent expansion may be judged.

Two types of expansion may be distinguished since 1919. The entire period 1921-29 may be considered a single expansion, since in many measures of economic activity, especially those on an annual basis, the contractions of 1923-24 and 1926-27 appear as mild interruptions in a vigorous climb to a peak in 1929. Or the evidence of monthly data may be examined more closely and the dating of the four reference expansions, established in the business cycle study at the National Bureau under the direction of Wesley C. Mitchell and Arthur F. Burns, accepted. The annual dates of these four reference expansions are: 1919-20, 1921-23, 1924-26, and 1927-29.

We compare the recent rise with both the long expansion from 1921 to 1929 (col. 4-6 and 11-13, Table 2) and the shorter reference expansions (col. 7 and 14). The percentage distributions for the 1921-29 expansion were computed by the same procedure as for the recent expansion: the total rise in commodity product from 1921 to 1929, or from 1921-22 to 1928-29, or from 1921-23 to 1927-29 was taken as 100, and changes in the components or subtotals during the same periods were converted into percentages of the total rise in commodity product. For the four reference expansions we averaged the total rise in commodity product (in dollar values), the changes during the four fixed periods in the components or subtotals; and converted the latter into percentages of the average rise in commodity product.

Annual data are none too accurate a guide in cyclical analysis, and our estimates are rough. Nevertheless broad similarities and differences are useful as suggestions to be checked with the help of more detailed and accurate data. It is as tentative suggestions that the conclusions from the comparisons in Table 2 are submitted.

a] The absolute magnitude of the rise in commodity product during the recent expansion was either equal to or larger than during the 1921-29 expansion or during the average of the reference expansions of 1919-32, with the single exception of the comparison of the change from 1932 to 1937 with the change from 1921 to 1929 in 1929 prices. On conversion to an annual basis, the greater absolute magnitude of the rise during recent years is clear.

ANNUAL RISE IN COMMODITY PRODUCT, VARIOUS EXPANSION PERIODS

(*millions of dollars*)

	1932-34 to 1935-37	1921-23 to 1927-29	1932 to 1937	1921 to 1929	Average, 4 Reference Expansions, 1919-32
Gross Commodity Product					
Current prices	6,815	2,406	5,970	2,788	5,358
1929 prices	5,219	2,722	4,413	3,194	3,082
Net Commodity Product					
Current prices	6,486	2,105	5,622	2,486	4,646
1929 prices	5,197	2,434	4,391	2,891	2,791

b] The share contributed by capital formation, both gross and net, to the rise in commodity product during the recent expansion exceeded the share contributed during either the 1921-29 expansion or, on the average, during the reference expansions; accordingly, the share contributed during the recent expansion by consumers' outlay on commodities was smaller than during preceding expansions within the period covered by our analysis. The greater share of capital formation is observable even for values in current prices; when translated into 1929 prices, it becomes very marked indeed.

c] In view of current discussion concerning the share of business capital formation in recovery, especial interest attaches to the comparisons in lines 13, 14, 15, 19, 26, and 27 of Table 2—the share in the rise in commodity product of three totals: (i) capital formation destined for business use—the sum of producers' durable commodities, business construction, and net flow to inventories; (ii) same total as (i) but excluding net flow to inventories; (iii) total private durable capital formation, comprising residential and business construction and the flow of producers' durable commodities. Of these three totals, the third probably comes closest to describing what is commonly understood as private investment or capital formation by private business.

Capital formation for business use, including net flow to inventories, shows a greater rate of participation in the rise in commodity product during the recent than during the 1921-29 expansion, whether the comparison is for gross or net capital formation, in current or 1929 prices. But as compared with its average share during the reference expansions, its share during the recent expansion is smaller in current prices and about the same in 1929 prices. When net flow to business inventories is excluded, the greater rate of participation during the recent expansion disappears: in current prices the share of capital formation for business use is somewhat lower during the recent expansion, and in 1929 prices it is about equal to or somewhat greater than during the 1921-29 expansion. Finally, when private durable capital formation is considered, its share in the rise in commodity product during the recent expansion is smaller than

during the 1921-29 expansion only for gross values in current prices. In all other comparisons with the 1921-29 expansion, and in all comparisons with the reference expansions, the share during the recent rise is either equal to or significantly higher than in earlier expansions.

Values in 1929 prices, even though cruder approximations, are more significant for the purpose of studying the real rise during recent and earlier expansions. It is, therefore, of great interest that in 1929 prices, the share of any of the three totals of business or private capital formation in the recent rise in commodity product is either equal to or significantly higher than in the earlier expansions.

d] The conclusions under (b) and (c) are further illuminated by a study of individual components. The relative shares of perishable, semidurable, and consumers' durable commodities, each taken singly and all together, were less during the recent expansion than during the long expansion of 1921-29; the shares of residential construction, producers' durable, and net flow to inventories were distinctly greater. The components of capital formation whose shares in the rise in commodity product were lower during the recent than during the 1921-29 expansion were business construction, and, somewhat less clearly, public construction. The difference in the shares of residential construction during the two expansions is due, perhaps much more than for other components, to differences in the timing of the rise.

e] To the rise in commodity product the flow of perishable (except in current prices), semidurable, consumers' durable commodities, and the net flow to inventories contributed smaller percentage shares during the recent expansion than, on the average, during the reference expansions. The components whose changes accounted for a larger share of capital formation in the rise in commodity product during the recent expansion are residential construction, flow of producers' durable commodities, and public construction. However, the relative differences in the share of the net flow to inventories are small for the comparison in 1929 prices, this particular component accounting on the average for almost one-third of the total rise in commodity product, during both the recent expansion and the reference expansions.

Numerous other conclusions could be drawn from Table 2, especially concerning the differences in percentage distribution between the long expansion of 1921-29 and the average of the reference expansions. Immediately noticeable are the strategic importance during the latter of net flow to inventories as compared with its very small share during the 1921-29 rise; the smaller average share of the various construction components and of the flow of perishable commodities during the reference expansions. But these differences cannot be analyzed in this *Bulletin.*

3. Relative Intensity of Participation

The relative share of any component in the rise (or decline) of a total such as commodity product can be traced to two factors: the average size of each component and its susceptibility to a rise (or decline) during the fixed period used. Thus gross capital formation contributes about one-half of the rise in gross commodity product during the 1932-37 expansion. This contribution might be because: gross capital formation had an average value about one-half the average value of gross commodity product and was subject to a cyclical rise of the same relative magnitude as the rise in gross commodity product; gross capital formation accounted for less than one-half of gross commodity product but was subject to a rise of greater relative amplitude than the latter; gross capital formation accounted for more than one-half of gross commodity product, but was subject to a rise of smaller relative amplitude than gross commodity product.

To discover the reason for the size of the contribution, changes in the components must be related to their average rise. But this can be done satisfactorily only if the average value of a component is of appreciable positive magnitude and is derived from items uniform in sign. Consequently, our analysis is confined to gross commodity flow and gross value of construction, and utilizes a total exclusive of net flow to inventories and net additions to claims against foreign countries.

Another difficulty is the selection of the period for which to compute the average value of each component and of gross commodity product (exclusive of the two net change items). Two types of period may be adopted. We may compute the average value of components and of commodity flow over the whole period covered by our estimates, 1919-37, and thus compare the relative shares during the various expansions with the average value over the period as a whole. Or we may compute the average values for the years covered in each expansion, and then compare the percentage distribution of the rise in commodity product during each expansion with the percentage distribution of the average value of commodity product, the averages referring to the successive periods covered by different expansions.

Whatever the period for which average values are computed, the percentage distribution of average values and of the rise in gross commodity product among changes in its components can be most easily compared by dividing the percentage shares in the latter distribution by those in the former. The resulting ratio, which may be designated 'rate of relative intensity of participation', will equal one if the relative share of changes in the component in the rise in commodity product is exactly equal to the relative share of the average value of that component in the average value of commodity product. Such a ratio would indicate that the amplitude of the rise in the given component, relatively to its average value, is exactly equal to the amplitude of the rise in commodity product relatively to the average value of the latter. A rate of relative intensity of participation less than one indicates that the relative amplitude of the rise in the given component is lower than the relative amplitude of the rise in commodity product itself. A rate of relative intensity of participation greater than one indicates that the relative amplitude of the rise in the given component is higher than the relative amplitude of the rise in commodity product itself. The rate of relative inten-

TABLE 3

Relative Intensity of Participation by Components in the Rise in Gross Commodity Product Expansion of 1932-1937 compared with Earlier Expansions

RATE OF RELATIVE INTENSITY OF PARTICIPATION

TOTALS AND COMPONENTS	CURRENT PRICES						1929 PRICES					
	Rise 1932-37 compared with av. value for		Rise 1921-29 compared with av. value for		Av. change during 4 reference expansions compared with av. value for		Rise 1932-37 compared with av. value for		Rise 1921-29 compared with av. value for		Av. change during 4 reference expansions compared with av. value for	
	1919-37 [1]	1932-37 [2]	1919-37 [3]	1921-29 [4]	1919-37 [5]	4 ref. expansions [6]	1919-37 [7]	1932-37 [8]	1919-37 [9]	1921-29 [10]	1919-37 [11]	4 ref. expansions [12]
Gross Commodity Product												
1 Flow of perishable commodities	.79	.71	.70	.75	.74	.77	.38	.34	.58	.62	.59	.62
2 Flow of semidurable commodities	.66	.69	.68	.68	.96	.94	.49	.47	.99	1.03	.79	.82
3 Flow of consumers' durable commodities	1.21	1.26	1.59	1.52	1.67	1.65	1.75	1.91	1.71	1.61	2.13	2.02
4 Residential construction	1.29	2.82	.77	.54	.38	.30	2.17	4.64	.70	.48	.17	.12
5 Flow of producers' durable commodities	2.21	2.26	1.59	1.64	1.44	1.43	3.19	3.39	1.70	1.69	2.20	2.13
6 Business construction	1.13	1.76	2.17	1.85	1.72	1.49	1.68	2.78	1.87	1.57	1.70	1.43
7 Public construction	.98	.82	1.40	1.50	.77	.87	.95	.87	1.21	1.31	.45	.50
8 Gross commodity product[1]	1.20	1.23	1.04	1.04	1.27	1.24	1.38	1.41	1.05	1.04	1.29	1.27
9 Flow of consumers' commodities	.83	.79	.84	.87	.95	.97	.63	.60	.87	.90	.89	.92
10 Gross capital formation excl. net change items	1.55	1.86	1.51	1.37	1.16	1.08	2.23	2.80	1.44	1.28	1.35	1.22
11 Gross capital formation[1]	2.26	2.98	1.60	1.49	2.17	1.92	3.71	5.08	1.61	1.42	2.53	2.16
12 Capital formation for business use[2]	3.07	3.91	2.27	2.21	3.81	3.37	5.21	6.95	2.32	2.13	4.78	4.08
13 Capital formation for business use excl. inventories	1.80	2.11	1.78	1.71	1.53	1.45	2.62	3.19	1.77	1.64	2.01	1.84
14 Private durable capital formation	1.68	2.23	1.54	1.35	1.25	1.12	2.51	3.42	1.49	1.27	1.55	1.34
15 Nondurable commodities	.75	.70	.69	.72	.80	.83	.41	.37	.70	.74	.65	.68
16 Durable commodities and construction	1.43	1.63	1.54	1.42	1.35	1.28	2.05	2.45	1.54	1.40	1.63	1.50

[1] Includes net flow to inventories and net addition to claims against foreign countries. The rate for gross commodity product excluding these items is necessarily 1.00.

[2] Includes net flow to inventories.

sity of participation for total commodity product is, naturally, always equal to one.[5]

Table 3 presents rates of relative intensity of participation for the various gross components, as well as for the wider totals. But in addition to commodity product and capital formation, confined to flow of commodities and construction, it presents measures for totals inclusive of net flow to inventories and net addition to claims against foreign countries. Since these items are of a small relative magnitude, when treated as parts of the wider totals, it is permissible to compute rates of relative intensity of participation for these totals. Finally, in order not to complicate presentation, measures of relative intensity of participation are given in Table 3 for the recent expansion and for the 1921-29 expansion, only for the periods from the single year troughs (1932 and 1921) to the single year peaks (1937 and 1929). The conclusions from measures based on rise between averages of values for more than one year would be similar to those suggested by Table 3.

a] The rate of relative intensity of participation for capital formation is invariably above one, which means that the rate for consumers' outlay on commodities is invariably below one. This contrast is greater for values in 1929 prices than for those in current prices; and for capital formation inclusive of the net flow components than for that exclusive of them. Rates of relative intensity of participation well above one characterize also the various totals of business or private capital formation. Furthermore, there is an equally significant contrast between rates of relative intensity of participation below one for total nondurable commodities and above one for total durable commodities and construction.

b] However, not all components of consumers' outlay on commodities show a rate below one; and not all components of capital formation show a rate above one. The flows of consumers' perishable and, with one exception, semidurable commodities are characterized by rates that indicate that the relative amplitudes of the rises in these components during reference periods of cyclical expansion are well below the relative amplitude of the rise in commodity product. But the flow of consumers' durable commodities shows rates significantly above one. Among the components of capital formation, public and residential construction show rates below one for the average of the reference expansions; the former shows a rate below one even for the expansion of 1932-37, and the latter for the expansion of 1921-29.

[5]Another way of computing rates of relative intensity of participation would be first to ascertain the amplitude of the rise in each component as well as in total commodity product, relatively to the average value of the items in question; and then divide the relative amplitude of the rise in each component by the relative amplitude of the rise in total commodity product. The results should be identical with the results of the division of the percentage share of each component in the rise in commodity product by the percentage share of the average value of each component in the average value of commodity product. The rate of relative intensity of participation thus indicates the ratio by which the relative amplitude of the rise in each component is greater or smaller than the relative amplitude of the rise in commodity product.

c] The rates of relative intensity of participation, computed in terms of the average values for the period as a whole, show the same similarities and differences in behavior between the 1932-37 expansion and the earlier expansions as were shown in Table 2. This is inevitable since these rates are obtained by dividing the percentages in Table 2 for the various expansion periods by one and the same set of percentages, that describing the percentage distribution of average values for 1919-37.

d] Thus only the rates based on the average values for each expansion can yield a comparison between the most recent and earlier expansions significantly different from that in Table 2. Observing these rates in Table 3 for the various components and subtotals of gross capital formation, we find that they show an even greater rate of intensity of participation by capital formation in the rise during the recent expansion than would be expected from Table 2. This is clearly demonstrated by the fact that for all components of capital formation, except public construction, the rates in columns 2 and 8 exceed those in columns 1 and 7; while the rates in columns 4, 6, 10, and 12 are less than those in columns 3, 5, 9, and 11 respectively.

e] As a consequence, rates of intensity of participation computed in terms of average values during the various designated periods of expansion are almost uniformly and significantly higher for gross capital formation or for the various totals of gross business capital formation during the recent than during the 1921-29 expansion or, on the average, during the four reference expansions, 1919-32. Only for business construction in current prices and public construction in both current and 1929 prices are the rates of relative intensity of participation lower during the recent expansion than during earlier expansions, and only in comparison with that from 1921 to 1929.

f] Similarly, the corresponding rates of intensity of participation for total durable commodities and construction are higher during the recent expansion than during the earlier expansions.

4. Extent of Recovery

The preceding analysis suggested that the absolute magnitude of the 1932-37 expansion was, for most comparisons, at least as great as that of preceding expansions during the period covered by our estimates; that total business capital formation, in all three variants, showed, for comparisons in 1929 prices, a share in the recent rise in commodity product equal to or greater than the share during the earlier expansions; and that the rate of intensity of participation by total or business capital formation was equal to or higher during the recent expansion than the rates prevailing in the earlier expansions. These conclusions seem at first to contradict prevalent opinion to the effect that the recovery was not vigorous as compared with previous expansions; that capital formation, especially by business agencies, definitely lagged; and that many economic problems besetting the country are to be traced to this failure of business capital formation to recover vigorously.

The contradiction is, however, only apparent. The analysis in sections 2 and 3 deals with *changes* only; whereas the preva-

lent notions just mentioned refer to *absolute volumes* of economic activity as compared with some desirable levels. Briefly, the difference is between emphasizing *expansion* and emphasizing *recovery*. So far we have emphasized the former; we now consider the levels of activity to which this expansion brought us, judging them in the light of some desirable levels.

For this purpose volumes in 1929 prices alone are fully relevant: a change in the volume of activity when measured in current price levels cannot be easily interpreted as representing a rise or decline in the supply of goods. But even if the comparison is confined to measures in 1929 prices,[6] there is still the question what level should be chosen as a basis for measuring the extent of recovery by the end of the recent expansion.

Since the usual reference is to 1929 levels, one may compare the volume of activity in this last pre-depression year with the volume in 1937, the year that seems to mark the culmination of the recent expansion. But it may be objected that the high levels of 1929 do not necessarily represent volumes of activity that can be considered desirable or normally to be expected; and that while the 1937 levels were likewise at the culmination of the expansion, we cannot assume that elements of transient exaggeration in 1937 were relatively the same as in 1929. If this contention is at all valid, the proper comparison in measuring recovery is not of levels for the single years 1929 and 1937, but between some averages. Those for 1928-29 and 1936-37 may conveniently be taken. Finally, it may be suggested that desirable pre-depression levels of operation are indicated by an average not for the two years 1928-29 but by some broader average for the decade of the 'twenties, one that would cover other years of culminating expansion. This would suggest the average levels for 1922-23, 1925-26, and 1928-29 as those of advanced phases of the shorter expansions during the 'twenties; we may then compare the levels of activity for 1936-37 with the average levels for these six years.

Levels at the culmination of the recent expansion are compared with these three variants of pre-depression levels, for totals in 1929 prices, in the first six columns of Table 4. In the other three columns the comparisons are similar but the general rise in the population of this country is taken into account and recovery is measured on the assumption that per capita pre-depression levels should be restored if recovery is to be complete. Of course, even this assumption disregards the secular rise in per capita production and hence the fact that complete recovery from a cyclical depression assumes not only a restoration of pre-depression per capita levels but also a rise in that per capita consonant with the secular rise in the country's economy.

We now summarize the conclusions suggested by the comparisons:

a] By the end of the recent expansion, total gross or net commodity product was at levels fairly close to those prevailing immediately before the depression, and higher than those for the six expansion years in the 1920's. On a per capita basis, the shortage in commodity product as compared with pre-depression years becomes more appreciable, amounting to about 11 per cent of the levels of 1929 or 1928-29.

b] Compared with pre-depression levels, the value of consumers' outlay on commodities at the culmination of the recent expansion showed a smaller shortage or greater excess than either gross or net capital formation.

c] Total capital formation for business use, including net flow to inventories, also shows but moderate shortages in 1937, or 1936-37, as compared with pre-depression levels; and in the per capita figures alone do the shortages become significant. But when the flow to inventories is excluded, the conclusion is modified. In the total of producers' durable commodities and business construction the recovery fell appreciably short of pre-depression levels even when not reduced to per capita figures. A similar shortage is still more marked for total private durable investment: the gross totals indicate a shortage of 18 to 25 per cent of pre-depression levels; net totals indicate a somewhat smaller absolute shortage but one that amounts to between 37 and 56 per cent of pre-depression net levels.

d] Consideration of the components reveals the difference in recovery among the various areas in economic activity more clearly. One component, net flow to inventories, shows uniformly a much higher level at the end of the recent expansion than the pre-depression level, whether total or per capita. It is this great weight of an increased flow to inventories that serves equally to account for the relatively favorable showing of capital formation and of the first total of capital formation for business use (lines 12 and 22). Gross public construction also shows, in all comparisons but one, excesses rather than shortages.

Two important components show either moderate shortages or moderate excesses over pre-depression levels: the flow of perishable commodities and of producers' durable equipment. The failure of the former to show either a material shortage or excess is not surprising in view of the expected stability of consumers' outlay on the purchase of perishable commodities. But the favorable showing of the flow of producers' durable equipment is unusual, and in conjunction with the significant rise in the flow to inventories, sheds light on the nature of the recent expansion treated as a recovery.

The most striking failure of recovery is in residential and business construction: total gross value at the end of the recent expansion was still from one-third to one-half short of pre-depression levels. And the net value of residential construction was still negative at the culmination of the recent expansion, as compared with positive values in or before 1929. It is these components that tend to bring down the totals of business or private durable capital formation and account for the unfavorable showing of the recent expansion treated as a recovery to pre-depression levels.

The flows of consumers' semidurable and durable commodities also show appreciable shortages, the former only in comparison with the immediate pre-depression years (1929 or 1928-29). These shortages are greater than for perishable or producers'

[6] Even volumes in 1929 prices are but rough measures of the positive result of economic activity, especially in view of the limitations of our estimates.

TABLE 4

Shortage or Excess of Volumes at the Peak of the 1932-1937 Expansion compared with Those at the Peaks of Earlier Expansions, Commodity Product and its Components

SHORTAGE OR EXCESS IN 1929 PRICES, TOTAL, AND PER CAPITA

TOTALS AND COMPONENTS	TOTAL						PER CAPITA IN PERCENTAGES OF EARLIER VOLUME		
	1937 compared with 1929		1936-37 av. compared with 1928-29 av.		1936-37 av. compared with av. of 1922-23, 1925-26, and 1928-29		1937 compared with 1929	1936-37 av. compared with 1928-29 av.	1936-37 av. compared with av. of 1922-23, 1925-26, and 1928-29
	Absolute (millions of dollars) [1]	Percentage of earlier volume [2]	Absolute (millions of dollars) [3]	Percentage of earlier volume [4]	Absolute (millions of dollars) [5]	Percentage of earlier volume [6]	[7]	[8]	[9]
Gross Commodity Product									
1 Flow of perishable commodities	572	2.0	1,054	3.8	3,163	12.3	—4.2	—2.6	1.2
2 Flow of semidurable commodities	—1,026	—8.5	—598	—5.1	756	7.2	—14.0	—10.9	—3.3
3 Flow of consumers' durable commodities	—1,644	—16.6	—1,326	—13.6	—162	—1.9	—21.6	—19.0	—11.3
4 Residential construction	—817	—27.1	—1,560	—42.9	—2,137	—50.7	—31.5	—46.4	—58.1
5 Flow of producers' durable commodities	96	1.4	47	0.7	1,031	18.7	—4.8	—5.6	7.2
6 Business construction	—1,855	—40.5	—2,071	—46.2	—1,499	—38.3	—44.0	—49.3	—44.0
7 Net flow of inventories	929	38.1	1,734	163.6	1,434	105.4	29.8	149.4	84.5
8 Public construction	29	1.0	248	8.6	792	33.6	—5.0	1.7	20.8
9 Gross commodity product[1]	—4,123	—5.8	—3,243	—4.7	2,799	4.5	—11.6	—10.6	—5.8
10 Flow of consumers' commodities	—2,098	—4.2	—870	—1.8	3,757	8.4	—9.9	—7.8	—2.2
11 Gross capital formation[1]	—2,125	—10.5	—2,373	—12.4	—958	—5.4	—15.9	—17.9	—14.7
12 Capital formation for business use	—830	—6.0	—290	—2.4	965	9.0	—11.5	—8.3	—1.5
13 Capital formation for business use excl. inventories	—1,759	—15.3	—2,025	—18.5	—469	—5.0	—20.4	—23.6	—14.2
14 Private durable capital formation	—2,576	—17.8	—3,584	—24.5	—2,605	—19.1	—22.7	—29.3	—27.1
15 Nondurable commodities	—454	—1.1	456	1.2	3,919	10.8	—7.1	—5.1	—0.1
16 Durable commodities and construction	—4,191	—15.3	—4,662	—17.1	—1,975	—8.0	—20.4	—22.3	—17.0
Net Commodity Product									
17 Net residential construction	—756	—142.6	—1,526	—128.0	—2,356	—116.5	—138.6	—126.3	—114.8
18 Net flow of producers' durable and net business construction	—1,062	—24.5	—1,401	—35.1	—406	—13.5	—29.1	—39.3	—21.5
19 Net public construction	—320	—13.8	—72	—3.1	384	20.8	—18.8	—9.4	9.4
20 Net commodity product[1]	—3,814	—6.3	—2,907	—5.0	2,234	4.2	—12.0	—10.9	—6.0
21 Net capital formation[1]	—1,716	—17.0	—2,036	—22.4	—1,523	—17.7	—22.0	—27.2	—25.7
22 Net capital formation for business use	—133	—2.0	333	6.6	1,027	23.5	—7.9	0.0	11.8
23 Net private durable capital formation	—1,818	—37.3	—2,927	—56.4	—2,762	—55.0	—41.1	—59.1	—59.3

[1] Includes net addition to claims against foreign countries.

durable commodities, but much smaller than for residential or business construction.

5. The Contraction of 1929-1932 and the Expansion of 1932-1937

Juxtaposition of the conclusions concerning the recovery by the end of the recent expansion with the conclusions derived from the analysis in sections 3 and 4 raises several questions. Why do components like the flow of perishable and semidurable commodities make such a favorable showing when compared with pre-depression years in Table 4, when their share in the rise in commodity product during the recent expansion was less than during earlier expansions and their rate of intensity of participation was well below one (see Tables 2 and 3, lines 1 and 2, for values in 1929 prices)? A similar question arises concerning consumers' durable commodities, although its share in the recent expansion was not as much below its share during earlier expansions as were those of the other two components of consumers' outlay on commodities. Why, at the culmination of the recent expansion, was there such an appreciable shortage in residential construction, when its share in the rise in commodity product during the recent expansion was well above its share during earlier expansions and its rate of intensity of participation was well above one? An answer to these questions would account also for the fact that total capital formation for business use, excluding inventories, and total private durable capital formation show appreciable shortages in Table 4 despite high shares in the rise in commodity product or high rates of intensity of participation in the recent expansion.

The explanation lies obviously in the behavior of the various components during the severe contraction that preceded 1932. The recovery to pre-depression levels is a combination of the decline from these levels to 1932 or 1933 and of the rise thereafter to the peak of the expansion in 1937. Any discrepancies between the recovery that would be expected on the basis of the rise in components from 1932 to 1937 and actual recovery—in comparison with pre-depression levels—is to be explained by differences in behavior during the contraction from 1929 (or any other pre-depression year used in the analysis) to 1932 or 1932-33.

Therefore, we now measure changes in the components and subtotals during the 1929-32 contraction and compare them with the changes in the subsequent expansion (Table 5). Since the purpose of these measures is largely to explain the differences in the recovery shown in Table 4, the values studied and the periods to which contraction and expansion are assigned conform precisely with the measures in Table 4. The contraction is from 1929 to 1932, or from 1928-29 to 1932-33, or from the average of the six expansion years of the 1920's to the average of 1932-33. The expansion is either from 1932 to 1937 or from 1932-33 to 1936-37. And the absolute changes established for these periods of both expansion and contraction are expressed as percentages of the corresponding pre-depression level. Comparison of these percentages for each component will thus yield directly the relative shortage or excess in its value at the end of the recent expansion as compared with pre-depression levels. The analysis is confined to totals in 1929 prices, without reduction to per capita averages. But the results of such reduction would be similar to those suggested by the analysis of totals.

Table 5, in conjunction with Table 4, reveals the interrelation between the severity of the decline during the 1929-32 contraction and the relative magnitude of the rise during the 1932-37 expansion, and the way in which the decline and the rise combine to yield by 1937 (or 1936-37) differences among components in their recovery to pre-depression levels. The conclusions concerning these interrelations may be summarized briefly.[7]

a] There is positive association not only between the *absolute* magnitude of the decline during the 1929-32 contraction and of the rise during the recent expansion, but also between the decline and the rise when expressed as percentages of pre-depression levels. Thus the greater the *percentage* decline during the contraction preceding 1932-33 the greater the relative rise during the expansion from 1932-33 to 1937. The association would be still more marked were the decline expressed in percentages of pre-depression levels and the rise in percentages of the level at the trough of the contraction.

b] While large relative declines during the contraction tend to be followed by large relative rises during the subsequent expansion, and low relative declines during contraction by low relative rises, the association is not sufficiently close to obliterate the effects of differences in decline during contraction on differences in recovery. For components excluding the net flow to inventories, the differences in decline during the contraction were still the dominant factor in determining differences in the recovery by the end of the 1932-37 expansion.

c] The evidence is inconclusive regarding the significance of differences in relative rise during the recent expansion in determining differences in relative shortage in 1937 or 1936-37 (as compared with pre-depression levels). If, however, we consider only the components referring to flow of commodities to users and construction (excluding net flow to inventories) the coefficients indicate that the differences in relative rise during the 1932-37 expansion did *not* contribute significantly to differences among the several components in the extent of shortage or excess they showed in 1937 or 1936-37. Thus, the relative rise in residential construction was more substantial than the rise in the flow of perishable and of semidurable commodities, and yet its shortage at the end of the expansion was much greater than for these components. The reason lies mainly in the extraordinarily severe decline in residential construction during the contraction that

[7] These conclusions are based largely on coefficients of rank correlation for the components in Tables 4 and 5, omitting the net addition to claims against foreign countries and computing measures for the other components, both inclusive and exclusive of net flow to inventories. Because of the small number of components, the coefficients are rather erratic, and their specific magnitudes are of limited significance. We have, therefore, omitted them from the text. The conclusions stated are based on the preponderant evidence of these coefficients, but are necessarily tentative.

TABLE 5

Absolute and Relative Magnitude of the Decline during the Depression culminating in 1932-1933 and of the Rise during the 1932-1937 Expansion, Commodity Product and its Components, 1929 Prices

TOTALS AND COMPONENTS	Absolute decline 1929-32 (millions of dollars) [1]	Absolute rise 1932-37 (millions of dollars) [2]	Decline 1929-32 as % of 1929 value [3]	Rise 1932-37 as % of 1929 value [4]	Absolute decline from 1928-29 av. to 1932-33 av. (millions of dollars) [5]	Absolute rise from 1932-33 av. to 1936-37 av. (millions of dollars) [6]	Decline from 1928-29 av. to 1932-33 av. as % of 1928-29 av. value [7]	Rise from 1932-33 av. to 1936-37 av. as % of 1928-29 av. value [8]	Absolute decline from av. of 1922-23, 1925-26, and 1928-29 to 1932-33 av. (millions of dollars) [9]	Absolute rise from 1932-33 av. to 1936-37 av. (millions of dollars) [10]	Decline from av. of 1922-23, 1925-26, and 1928-29 to 1932-33 av. as % of av. value for 1922-23, 1925-26, and 1928-29 [11]	Rise from 1932-33 av. to 1936-37 av. as % of av. value for 1922-23, 1925-26, and 1928-29 [12]
Gross Commodity Product												
1 Flow of perishable commodities	2,146	2,718	7.5	9.5	988	2,042	3.6	7.3	1,121	2,042	4.4	7.9
2 Flow of semidurable commodities	2,393	1,367	19.7	11.3	2,517	1,919	21.3	16.2	1,163	1,919	11.1	18.3
3 Flow of consumers' durable commodities	5,190	3,546	52.5	35.8	5,050	3,724	51.9	38.3	3,886	3,724	45.4	43.5
4 Residential construction	2,410	1,593	80.1	52.9	3,065	1,505	84.2	41.4	3,642	1,505	86.4	35.7
5 Flow of producers' durable commodities	4,290	4,386	62.3	63.6	3,797	3,844	58.5	59.3	2,813	3,844	51.1	69.9
6 Business construction	3,249	1,394	70.9	30.4	3,237	1,166	72.2	26.0	2,665	1,166	68.1	29.8
7 Net flow to inventories	5,661	6,590	232.1	270.2	3,568	5,302	336.6	500.2	3,868	5,302	284.4	389.9
8 Public construction	594	623	20.3	21.3	925	1,173	31.9	40.4	381	1,173	16.2	49.8
9 Gross commodity product[1]	26,290	22,067	37.1	31.2	23,574	20,329	34.4	29.7	17,531	20,329	28.1	32.6
10 Flow of consumers' commodities	9,729	7,631	19.3	15.1	8,556	7,685	17.3	15.6	3,928	7,685	8.8	17.2
11 Gross capital formation[1]	16,561	14,436	81.7	71.2	15,018	12,644	78.5	66.1	13,602	12,644	76.8	71.4
12 Capital formation for business use	13,200	12,370	94.9	88.9	10,602	10,312	88.1	85.7	9,346	10,312	86.7	95.7
13 Capital formation for business use excl. inventories	7,539	5,780	65.7	50.4	7,034	5,010	64.1	45.7	5,478	5,010	58.2	53.2
14 Private durable capital formation	9,949	7,373	68.7	50.9	10,099	6,515	69.1	44.6	9,120	6,515	66.7	47.8
15 Nondurable commodities	4,539	4,085	11.2	10.1	3,505	3,962	8.8	10.0	42	3,962	0.1	10.9
16 Durable commodities and construction	15,733	11,542	57.6	42.3	16,074	11,412	59.0	41.9	13,387	11,412	54.5	46.5
Net Commodity Product												
17 Net residential construction	2,397	1,641	452.3	309.6	3,075	1,549	258.0	129.9	3,905	1,549	193.1	76.6
18 Net flow of producers' durable and net business construction	6,938	5,876	159.9	135.5	6,482	5,081	162.2	127.1	5,487	5,081	182.8	169.3
19 Net public construction	688	368	29.6	15.8	1,040	968	45.1	42.0	584	968	31.6	52.3
20 Net commodity product[1]	25,770	21,956	42.5	36.2	23,146	20,240	39.6	34.6	18,005	20,240	33.8	37.9
21 Net capital formation[1]	16,041	14,325	159.4	142.3	14,590	12,554	160.2	137.8	14,077	12,554	164.7	146.1
22 Net capital formation for business use	12,599	12,466	185.9	183.9	10,050	10,383	198.7	205.4	9,355	10,383	214.5	238.0
23 Net private durable capital formation	9,335	7,517	191.8	154.4	9,557	6,630	184.2	127.8	9,392	6,630	186.9	132.0

[1] Includes net addition to claims against foreign countries.

ended in 1932-33. Similarly, the major source of the shortage in business construction is not that its relative rise during the expansion was so much less than that for other components: it is again in the extraordinary severity of its contraction after 1929. In three components only was a great severity in decline matched or more than matched by an extraordinarily large recent rise: net flow to inventories, flow of producers' durable commodities, and to a smaller extent, flow of consumers' durable commodities.

6. Decline from 1937 to 1938

The estimates of commodity flow and gross capital formation for 1938 are subject to a wider margin of error than the measures for the earlier years. Moreover, at the present time it is impossible to say with certainty whether the contraction that began in 1937 will have its annual trough in 1938 or in some later year. Nevertheless, it may be of interest to survey briefly the decline from 1937 to 1938, bearing in mind that the results of this survey may have to be revised considerably in the light of developments yet to come.

a] The magnitude of the decline in gross commodity product from 1937 to 1938 was substantial, in both current and 1929 prices. We may compare it with the decline in gross commodity product during the reference contractions since 1919.

Change in Gross Commodity Product from 1937 to 1938 compared with Changes during Reference Contractions

(*millions of dollars*)

	Change from 1937 to 1938	Changes during Reference Contractions: from 1920 to 1921	from 1923 to 1924	from 1926 to 1927	from 1929 to 1932 (per year)
Current Prices	—8,939	—19,614	—2,803	—1,704	—13,107
1929 Prices	—4,489	— 3,499	—1,122	+1,480	— 8,728

The decline from 1937 to 1938 was less substantial than during 1929-32, even when the latter is reduced to a per year basis; but more substantial than the declines in the preceding reference contractions, with the sole exception of 1920-21 in current prices. Were we to express the absolute changes as percentages of the values of gross commodity product at the peaks, the differences referred to above would be somewhat less but would still remain significant. Thus with respect to the absolute and relative magnitudes of the contraction in gross commodity product, the decline from 1937 to 1938 lies between the very severe contraction of 1929-32 and the milder contractions of the first post-War decade.

b] When measured in current prices, most of the components in Table 1 declined from 1937 to 1938. Only public construction and the net change in claims against foreign countries rose, the latter continuing its movement in a direction opposite to the cycle in general business conditions. But not all the components that declined contributed equally to the decline in gross commodity product; nor were their declines of equal relative severity when measured in percentages of their values in 1937. The components contributing most to the decline in gross commodity product were net flow to inventories (41 per cent); flow of consumers' durable commodities (25 per cent); flow of producers' durable commodities (19 per cent); flow of perishable commodities (13 per cent). In respect of severity of relative decline from peak value in 1937, net flow of inventories (109 per cent), flow of consumers' durable (29 per cent), and flow of producers' durable (24 per cent), again lead the list; but are followed by business construction (24 per cent) rather than by the flow of perishable commodities whose relative decline was only 5 per cent.

c] The adjustment for price changes, as in all preceding comparisons, affects most drastically the measures for perishable and semidurable commodities. In both groups the decline from 1937 to 1938 in current prices disappears when converted to 1929 prices. As a result, the components whose contraction accounts largely for the decline in gross commodity product in 1929 prices are net flow to inventories, flow of consumers' durable, and flow of producers' durable. These three components, together with a fourth, business construction, show also the most conspicuous relative declines in 1929 prices, when the values for 1938 are compared with those for 1937.

d] Because the reference contractions since 1919 are marked by a divergent behavior of components, it is difficult to establish for them the percentage distribution of the declines in commodity product among changes in the components. But, generally, the contractions of 1920-21, 1923-24, and 1926-27 are marked by extraordinarily large percentage shares contributed by declines in the net flow to inventories; by consistently significant contributions to the decline in gross commodity product made by changes in the flow of consumers' and of producers' durable commodities; and by an inconsistent behavior of all other components. The contraction of 1929-32, on the other hand, is distinguished by the fact that the decline is shown by all the components; and that the share contributed by the decline in the net flow to inventories, while substantial, is markedly lower than in the preceding contractions. This statement is true not only of the period 1929-32 as a whole, but also of the distribution of the decline in gross commodity product in the first year of the depression, viz., from 1929 to 1930.

The pattern of the decline in gross commodity product from 1937 to 1938 resembles that of the declines during the reference contractions of 1920-21, 1923-24, and 1926-27 in two respects: the failure of the flow of perishable and semidurable commodities, when measured in constant prices, to contract; and the very high share that the decline in the net flow to inventories contributes to the total decline in gross commodity product. Also, the appreciable rise in public construction and in net changes in claims against foreign countries makes the decline from 1937 to 1938 dissimilar to the contraction of 1929-32, when the latter is considered as a whole. On the other hand, the fact that both residential and business construction contributed to the decline in gross

commodity product from 1937 to 1938 makes it similar to that from 1929 to 1932, for none of the preceding three contractions was characterized by a decline in both these branches of construction activity. But in view of the rather small magnitude of the contraction in residential construction from 1937 to 1938, it may be doubted that the similarity in this respect of the recent decline to that of 1929-32 is significant.

7. Summary and Qualifications

The tentative conclusions of our analysis of commodity flow and capital formation during the recent expansion and subsequent decline may now be briefly summarized.

a] The rise in commodity product in 1929 prices during the recent expansion was either equal to or slightly less than during the 1921-29 expansion or, on the average, during the reference expansions since 1919. Differences in the result of the comparison were due to differences in the period over which the rise during the recent expansion and that of 1921-29 was measured.

b] In this rise in commodity product (in 1929 prices) during the recent expansion the share of capital formation was larger than in the rise during the 1921-29 expansion or, on the average, during the average reference expansions since 1919. This was also true of the share of business capital formation including net flow to inventories; while the shares of business capital formation excluding inventories and of total private durable capital formation were at least equal to their shares in the rise in commodity product during earlier expansions. Similarly, the rate of relative intensity of participation of total capital formation, or of the variants of business capital formation, was as high as or higher than during the earlier expansions studied.

c] In 1929 prices the levels of total commodity product, consumers' outlay on commodities, and capital formation were by the end of the recent expansion only slightly below pre-depression levels. But this was not true of capital formation excluding net flow to inventories; of total business capital formation excluding net flow to inventories; or of total private durable capital formation. They show by the end of the recent expansion (i.e., in 1937 or 1936-37) material shortages as compared with the pre-depression levels, largely owing to shortages in two components: residential and business construction.

d] Analysis of differences among components in their decline during the contraction that terminated in 1932 or 1932-33 and in their rise during the subsequent expansion suggests that the greater the absolute or relative decline during the contraction the greater the absolute or relative rise during the subsequent expansion; that differences in the severity of the decline during the contraction are the dominant factors in determining differences in the extent of shortage at the end of the expansion as compared with pre-depression levels; and that differences in the relative rise during the expansion are not important elements in determining differences in the shortage at the end of the recent expansion. These conclusions are true of components, excluding the relatively unimportant net addition to claims against foreign countries and the much more important net flow to inventories. Thus, for the flow of commodities to users and construction it may be said somewhat inaccurately but pointedly that the failure to recover by 1937 or 1936-37 was due much less to the weakness of the preceding rise from 1932 than to the extreme severity of the contraction that terminated in 1932 or 1932-33.

e] The decline in gross commodity product from 1937 to 1938, so far as it can be measured now, is less substantial than that from 1929 to 1932, even when the latter is reduced to a per year basis; but significantly larger than the declines in the reference contractions of 1920-21, 1923-24, and 1926-27 (with the single exception of that of 1920-21 in current prices). The components that contributed most to the recent decline are net flow to inventories, flow of consumers' durable commodities, and flow of producers' durable. Besides these three components, business construction also showed a marked relative decline from 1937 to 1938. Because of the unusually large share contributed to the 1937-38 decline by net flow to inventories and the failure of the flow of perishable and semidurable commodities, in 1929 prices, to contract, the decline from 1937 to 1938 appears more similar to the declines in gross commodity product in the reference contractions of the first post-War decade than to the contraction of 1929-32 (even when the latter changes are observed only for the first year, 1929-30). But these statements concerning the character of the recent decline must await confirmation.

The tentative character of all our conclusions should be kept in mind. We deal here with estimates subject to errors that are likely to be particularly sizable for the preliminary measures for recent years. The broad scope of the components distinguished may conceal divergence in movement or levels among various categories of goods and services included in each component. The annual character of the data precludes a close analysis of short term changes of the type associated with business cycles. We have followed the procedure of studying changes in the various components within fixed periods, without taking cognizance of the possible leads or lags in their movements compared with the movement of commodity product. We thus deal with data that veil a great deal of the underlying movement; and some of the similarities and differences may be illusions attributable to the crudities of the measures or procedures. These limitations affect especially our measures for the average of the reference expansions, since it is for short periods such as are involved in reference expansions that annual estimates are especially deficient.

Another source of difficulties becomes apparent in any attempt to interpret more fully our tentative conclusions. Can we say, in the light of our analysis, that the recent rise, in which the share of net flow to inventories was large and of private construction was small, represents a short reference cycle expansion rather than one of a long cycle similar to that of 1921-29; that the recession begun in 1937 and continuing through at least the early part of 1938 is, therefore, likely to be short lived, with private construction declining relatively less than the other components of business capital formation; that during the subsequent expansion private construction may regain a standing within

capital formation and commodity product similar to its standing before 1929; that the failure of private capital formation to recover fully during 1932-37, so much commented upon, was due partly to the severity of the preceding contraction in construction, partly to a lag in the latter, a lag that did not occur during the 1920's because of the peculiar conditions of housing shortage and shortage of business structures resulting from the War, but one that may be a not unusual feature of most expansions in the longer cycles? These conjectures seem plausible, but they are merely conjectures. No definitive evidence as yet exists for a clear distinction between the shorter reference cycles and longer cycles general to the economy as a whole; no sufficient record exists for years before 1919 to establish any characteristics of the interrelation between private construction and the flow of manufactured commodities in the cyclical processes; and we have not tried to take into account other factors, quantitatively measurable or qualitatively recordable, that would overcome the limitations of the short and peculiar historical period covered by our estimates.

The conclusions are thus tentative and their interpretation difficult because of the paucity of data and lack of thoroughgoing scrutiny of the various factors in the interrelation of commodity flow, capital formation, and the other elements in the total economic activity of the nation. And yet the discussion may be useful in providing tentative leads for further study and adding to the none too bountiful data on the recent changes in our economic system.

APPENDIX

Derivation of Preliminary Estimates for 1934-1938

I. Flow of Commodities to Consumers

Perishable: From the retail sales estimates of the Department of Commerce (*Domestic Commerce*, March 20, 1939) we took sales by stores in the following groups: foods, beer and liquor, eating and drinking, filling stations, and drugs. The totals were used as an index to extrapolate the 1933 figure of the cost to consumers of perishable commodities. By combining the Bureau of Labor Statistics wholesale price indexes for foods, anthracite coal, petroleum products, and drugs and pharmaceuticals, and utilizing the combined index to extrapolate the price adjustment index for 1933 (the latter was secured by dividing the 1933 figure for perishable commodities in current prices by that in 1929 prices; see *Commodity Flow and Capital Formation*, Volume One, Table V-10), we derived an index needed in the adjustment for price changes.

Semidurable: Retail sales of department, dry goods, general merchandise, mail order, variety and apparel stores were obtained from the Department of Commerce estimates and used to extrapolate the 1933 figure. The corresponding price index was secured by using the Bureau of Labor Statistics indexes of prices of shoes, textile products, and automobile tires and tubes to extrapolate the price adjustment index previously obtained by us for 1933 (*Commodity Flow*, Table V-10).

Consumers' Durable: Retail sales of the automotive, furniture and household groups, and jewelry stores, as estimated by the Department of Commerce, were used to extrapolate the 1933 figure. The corresponding price index was secured by using the Bureau of Labor Statistics price indexes of motor vehicles and house-furnishing goods to extrapolate the price adjustment index previously obtained by us for 1933 (*Commodity Flow*, Table V-10).

The reliability of the estimates for the above groups is affected by three factors: (a) the reliability of the Department of Commerce sales data; (b) the validity of using types of stores as indexes of the movement of commodity groups; (c) the validity of using retail sales as an index of cost to consumers. Little can be said about (b) and (c) except that they are not likely to affect significantly the reliability of the estimates. As to (a), experience has shown the Department of Commerce estimates to be quite accurate: its estimate of retail sales for 1935 was very close to the 1935 Census figure. Since 1935 the Department of Commerce has improved its sample of retail stores and there are no apparent reasons to doubt the accuracy of the annual estimates. Moreover, for 1937 the results of the *Retail Census Survey* were available as a check.

II. Producers' Durable Commodities

The 1935 and 1937 estimates of producers' durable commodities (excluding horses, mules, and milk cows) were based on the movement from 1933 to 1935 and from 1935 to 1937 of the aggregate value of production of all pertinent commodities reported in the 1935 and 1937 *Census of Manufactures*. Figures for 1934 and 1936 were estimated from the movement of gross income, as reported in *Statistics of Income*, of corporations manufacturing locomotives and railroad equipment, factory machinery and equipment, electrical machinery and equipment, miscellaneous machinery, office equipment, etc., and hardware, tools, etc.; together with the value of output of motor trucks reported in the 1938 edition of *Automobile Facts and Figures*. The tentative estimate for 1938 was based on sales data in *Dun's Review*, May 1939, for the following industries: electrical apparatus and appliances, machine shop products, agricultural machinery, railroad equipment, aircraft, office and business machinery and heavy machinery; and on the motor truck production estimate of the Automobile Manufacturers' Association.

A price index for 1934-37 was secured by using Solomon Fabricant's index of producers' durable goods to extrapolate the price adjustment index previously obtained for 1933 (*Commodity Flow*, Table V-10). For 1938 the Bureau of Labor Statistics wholesale price index for farm machinery was used as an extrapolater.

Values for horses, mules, and milk cows in both current and 1929 prices were estimated by the method used in *Commodity Flow* (see notes to Table V-9 for details). However, revised data of the Department of Agriculture were utilized and the estimates are thus not strictly comparable with those made for 1933 and earlier years. This lack of comparability is minor.

The question of reliability arises largely in connection with

manufactured products. Our estimates for 1934-37 are good approximations, based as they are on Census data for 1935 and 1937 and *Statistics of Income* data for 1934 and 1936; although, of course, the use of manufacturers' values implies constant markups. The estimate for 1938 depends upon the reliability of the Dun and Bradstreet data. Their sample for the machinery industries covers about 45 per cent of the Census total as of 1937.

III. CONSTRUCTION

Residential: The components of total residential construction were estimated as in the earlier years (*Commodity Flow*, Table VI-7 and notes). David L. Wickens' estimates of nonfarm residential construction were utilized directly; major additions and alterations were approximated from the permit data; and farm dwellings were estimated in the same manner as previously.

For 1936-38, however, the estimate of new residential construction, excluding farm, was extrapolated by the Department of Commerce estimates published in the *Survey of Current Business*, December 1938.

Business: Nonresidential construction, excluding farm, was estimated from Dodge contract data for commercial, factory, religious and memorial, and social and recreational buildings; major additions and alterations were approximated from building permit data; farm construction was obtained directly from Department of Agriculture estimates. For 1937 and 1938 total new nonresidential excluding farm was extrapolated by Department of Commerce estimates of nonresidential construction.

The different types of public utility construction were estimated from sources described in *Commodity Flow*, Note A to Table VI-8, and from the estimates of Peter Stone in *Construction Expenditures and Employment:* 1936-1938, published by the Works Progress Administration.

Public: Extrapolation for 1932-38 was based on Department of Commerce estimates. The use of this series revises slightly the values for 1932 and 1933 in *Commodity Flow*, Table VI-9.

The construction estimates for 1934-37 are of the same degree of accuracy as those for earlier years. The estimates for 1938 are probably less reliable although two independent investigators, Harold Wolkind (Department of Commerce) and Peter Stone (Works Progress Administration), arrived at approximately the same percentage changes from 1937 to 1938 in the different types of construction.

IV. INVENTORIES

1. *Derivation:* Although only the totals of net changes in inventories are presented, the basic estimates, especially those in current values, were made in considerable detail.

a] *Farm:* Inventories in the hands of farmers were estimated by the method used for the earlier years, described in *Commodity Flow*, Table VII-4 and the notes. Since revised data of the Department of Agriculture were utilized, the estimates are not directly comparable with those for 1933 and earlier years; the lack of comparability is minor.

b] *Manufacturing:* The availability of *Statistics of Income* for 1934-36 made it possible to estimate corporate inventories for these years as outlined in *Commodity Flow*, Tables VII-1 and VII-2, and the notes to them. For 1937 data from the 1937 *Census of Manufactures* were used to extrapolate the 1936 estimate derived from *Statistics of Income* data. For 1938 data published in *Dun's Review*, May 1939, were used to extrapolate the 1937 estimate.

c] *Mining:* For 1934-36 data from *Statistics of Income* were used. For 1937 mining, service, and miscellaneous inventories were based on the 1936 relationship of the three groups to a total including manufacturing and transportation inventories. A similar procedure was followed for 1938, inventories for the three groups and for transportation being based on the 1937 relationship to manufacturing inventories alone.

d] *Service:* A procedure corresponding to that used for mining was followed.

e] *Transportation and public utilities:* Estimates for 1934-36 were based on *Statistics of Income* data. For 1937 an index of ratios derived from materials and supplies held by and gross revenues of Class I steam railways, electric railways, pipe lines, carriers by water, telephone companies, and telegraph and cable companies was applied to a 1936 ratio calculated from estimated inventories for all transportation and public utility companies. The resultant ratio was then applied to the gross revenue total for 1937. For 1938 see mining under (c) above.

f] *Finance and nature of business not given:* Estimates for 1934-36 were derived from *Statistics of Income* data. For 1937 and 1938 see mining under (c) above.

Translation into 1929 prices and the calculation of net changes for the groups described in (b) through (f) was made in much less detail than the derivation of inventories in current values. Inventories held in manufacturing, mining, transportation and public utilities, service, finance, and nature of business not given industries, were added. Price indexes for 1933 were derived by comparing the aggregates of these groups in current and 1929 prices, and the total net changes in 1929 and current prices. These 1933 price indexes were then extrapolated by the Bureau of Labor Statistics wholesale price index for all commodities other than farm products. In determining for each year whether cost or market was lower, the annual average was assumed to represent cost and the average of December and the following January market.

g] *Construction:* For 1933-36 inventory-sales ratios for construction corporations were derived from *Statistics of Income* data. They were used to extrapolate a 1933 ratio based on the construction inventory estimate for that year and new construction. Inventories for 1934-36 were then estimated by applying the adjusted ratios to the value of new construction in each year. A similar procedure was followed for 1937 except that inventory-sales ratios for lumber and building material wholesalers reported in the *Census of Business: 1937-38, Wholesale Distribution* were used. For 1938 inventory-sales ratios for lumber, millwork and other building materials, and plumbing and heating supplies wholesalers reported in *Dun's Review*, May 1938, were used to extrapolate the previously derived 1937 figure.

Translation of these construction inventory estimates into 1929 prices and the subsequent calculation of net changes was accomplished by means of the price index used for earlier years (*Commodity Flow*, Note C to Table VI-1), the Bureau of Labor Statistics wholesale price index for building materials. The 1933 adjustment to this index (see Note C) was applied in all succeeding years.

h] *Trade:* Wholesale and retail trade in current values were estimated separately. For wholesale trade sales estimates prepared by the Department of Commerce were taken for 1933-35 (*Domestic Commerce*, February 28, 1937, January 30, 1938). The 1933 and 1935 'estimates' are actual Census data; 1934 alone is an estimate. The Department of Commerce has provided also estimates of the sales of wholesalers proper for 1936-38 (*Domestic Commerce*, April 10, 1939). These were used to extrapolate the estimates of total wholesale sales available for the earlier years.

We computed an inventory-sales ratio for 1933 based on our inventory estimate for that year and on Census sales figures used by the Department of Commerce, as well as inventory-sales ratios based entirely on wholesale Census data for 1933 and 1935. The 1935 ratio was adjusted on the basis of the two ratios for 1933, the adjusted percentage being applied to the 1935 wholesale sales figure.[1] In order to make estimates for the other years indexes of inventory-sales ratios were calculated and applied to the adjusted 1935 ratio. For 1934 the movement between 1934 and 1935 of inventories and sales of corporations engaged in trade (*Statistics of Income*) was used. For 1936 and 1937 an index based on the *Census Survey of Wholesale Distribution* was used and for 1938 an index derived from Dun and Bradstreet data (*Dun's Review*, May 1939).

A similar technique was followed in estimating retail inventories. Of course, retail sales estimates (*Domestic Commerce*, April 10, 1939) and inventory data were used wherever available, i.e., except for the 1934 inventory-sales ratio index, which again was derived from all trade corporations. Moreover, Dun and Bradstreet inventory-sales ratios were used for 1936 and 1937 as well as for 1938.

In the adjustment for price changes the wholesale and retail inventory estimates were combined. Indexes derived by comparisons of the appropriate figures in 1933 (*Commodity Flow*, Tables VII-8, VII-9, and VII-10) were extrapolated by means of the Bureau of Labor Statistics wholesale price index for all commodities other than farm. An average of October and November was used to indicate cost, and the customary average of December and the following January for market.

The accompanying table shows the annual changes in stocks of monetary metals from 1932 to 1938 (for derivation see V below). Its components may be used to render the inventory estimates in Table 1 comparable with those in *Commodity Flow*.

	1932	1933	1934	1935	1936	1937	1938
				CURRENT PRICES			
Total change in stocks of gold and silver	+53	−182	+1,065	+2,173	+1,285	+1,643	+1,932
Change in inventory of gold resulting from net gold movements	+11	−173	+1,217	+1,739	+1,030	+1,386	+1,640
Change in inventory of gold and silver stocks	+42	−9	−152	+434	+255	+257	+292
				1929 PRICES			
Total change in stocks of gold and silver	+54	−178	+704	+1,397	+847	+1,053	+1,255
Change in inventory of gold resulting from net gold movements	+11	−173	+719	+1,027	+608	+819	+969
Change in inventory of gold and silver stocks	+43	−5	−15	+370	+239	+234	+286

2. *Reliability:* The availability of *Statistics of Income* for 1934-36 make the estimates for these years as reliable as those for the earlier years. Likewise the agricultural inventory estimates are equally accurate for 1934-38. (However, agricultural inventories as estimated are not strictly comparable with the estimates for earlier years because of the use of revised figures prepared by the Department of Agriculture.) Wholesale inventories, being based on a partial U. S. Census, are probably accurate also in 1937, as is the estimate of retail inventories based on Dun and Bradstreet data. No adequate checks for mining, service, and miscellaneous inventories in 1937 can be found at present; but transportation and public utility inventories, being based on comprehensive data, are fairly reliable. For 1938 all the estimates are tentative.

These comments concern the basic estimates in current values. The use of approximate price indexes to derive net changes naturally makes the latter less reliable. However, they seem to be the best that can be made on the basis of the available data, barring minor but laborious refinements.

V. OTHER COMPONENTS

Net changes in silver and gold stocks and in claims against foreign countries were estimated from the sources used for earlier years—*Annual Reports* of the Director of the Mint and the *Balance of International Payments in the United States*.

[1] These small corrections were necessary because of minor changes in the structure of the Wholesale Census from Census year to Census year. Since our estimates use the 1929 Census as a base we must make later Censuses as comparable with it as possible.

Commodity Flow and Capital Formation, 1932-1938

The accompanying table shows the net gold movements to and from the United States. If these are added to the figures for net addition to claims against foreign countries in Table 1, the resulting totals will be comparable with those in *Commodity Flow*.

	1932	1933	1934	1935	1936	1937	1938
				CURRENT PRICES			
Net gold movements	—11	+173	—1,217	—1,739	—1,030	—1,386	—1,640
				1929 PRICES			
Net gold movements	—11	+173	—719	—1,027	—608	—819	—969

Capital consumption data for 1934 and 1935 are based on final estimates in *Capital Consumption and Adjustment.*[2] For 1936 and 1937 Solomon Fabricant prepared preliminary estimates based primarily on a sample of a few hundred corporations reporting depreciation in *Moody's Industrials* and on available public utility data. Fire losses and residential and public depreciation and depletion were also estimated roughly.

The measures of capital consumption for 1934 and 1935 are as good as those for preceding years. For 1936 and 1937 they are admittedly rough, but their general stability over time makes tolerable approximations likely.

[2]These estimates are not strictly comparable with those used for earlier years because of minor revisions. Inasmuch as these revisions would but slightly affect our figures for the earlier years, we have not incorporated them.

The Annalist, on October 26, 1938, described the volume which this *Bulletin* brings up to date as representing "part of an exhaustive investigation into what makes the wheels of the so-called economic system revolve.

Whatever the more profound conclusions which this study, when finally completed, may lead to, this volume is an important contribution if only for the way in which it dispels some of the illusions which some popular writers have dangled before the eyes of the public. . . ."

OTHER REVIEWS

Ebb and Flow in Trade Unionism, by Leo Wolman (251 pp., $2.50)

The Society for the Advancement of Management Journal, May 1939 (review by Henry C. Metcalf)

"Dr. Wolman's analyses of the labor movement, as this reviewer can testify from first-hand group participation, always command deep interest and arouse serious reflection and animated criticism and discussion. Written more than three years ago, his book *Ebb and Flow in Trade Unionism* serves as an excellent background for understanding the 'modern period'. . . .

This volume is a realistic contribution to one of the gravest problems now engaging national attention—namely, what constitutes wholesome employer-employe relations? The analysis gives comprehensive figures on trade union membership, revealed in thirty-six tables and five charts, showing trade-union affiliations, stable and unstable memberships, growth in relation to working population, percentage of trade-union organization among employes, etc.

But Dr. Wolman goes beyond complete and authoritative figures on trade-union membership. He carries us over a broad discussion, as well, of the NRA trade-union era; the present split in the ranks of organized labor and many of the vital problems now facing us—problems of measurement as an index of organized labor's strength, highly important from the political angle; union growth and consolidation during 1897-1914; the vicissitudes of organized labor during the 1920's prosperity, and the influences of the 1930-1933 depression forces; the aftermath of war prosperity and the new era; the causes of the recent changes in unionism under the recovery administration. Here is clarified the important fact that the industrial form of labor organization 'has been widely and vigorously debated for the last several years'. The baffling administration problems, evoked by the NIRA Section 7a, that 'employees shall have the right . . . to bargain collectively through representatives of their own choosing', now testing the judicial calibre of the NLRB in deciding upon representation elections, is treated in realistic fashion.

Those who are attempting to predict what channels future labor organization will take will find the statistics of the past significant. Three unions—the craft building trades, non-affiliated railroad brotherhoods, and industrial coal-mining unions—have dominated the organized labor movement in this country. According to Dr. Wolman, 'The Next Years' for the labor movement cannot be predicted without determining the future labor policy of the government, the attitude of employes and employers toward collective bargaining, general business conditions, and internal relations of the labor movement.

This clear, concise, yet exhaustive, report is a distinct contribution to American labor literature. Its conclusion is that the A. F. of L. and labor generally have cast aside the traditional laissez-faire attitude and will in the future be more active in encouraging labor-government-industry harmony. In that triangle lies the formula for genuine industrial peace. Although much has happened in the labor world since 1936, those who are in search of the labor roots in our American economy will do well to ponder this carefully documented volume."

Studies in Income and Wealth, Volume Two, by the Conference on Research in National Income and Wealth (pp. 331, $3; together with Volume One, $5)

American Economic Review, June 1939 (review by Henry H. Villard):

"This volume, the second in a series of studies, contains reports presented at the December, 1937, meetings of the American Economic and the American Statistical Associations and the third meeting of the Conference in April, 1938, as well as subsequent discussion and correspondence. The purpose of the Con-

ference continues to be the stimulation of discussion and analysis of the problem of income and wealth measurement and the establishment of the implications of the various methods that may be used. As a result, no attempt is made to establish a consensus of opinion. Rather, as in the first volume, problems are analyzed by individual students and their results discussed by various members of the Conference, in the belief that proper formulation of the issues will ultimately lead to a more widely held consensus of opinion.

. . . In general, the reviewer cannot close without repeating his praise, contained in his review of the first volume, of the entire undertaking embodied in the Conference and of the scholarly level on which it has been conducted, as well as his hope that agreements on terms in other fields may be achieved in a similar fashion."

Capital Consumption and Adjustment, by Solomon Fabricant (271 pp., $2.75)

Economic History Review, May 1939 (review by B. Tew):

"The book is a scholarly piece of work; the statistics are generally well presented, the method of compiling them stated at length, and all the necessary reservations made in drawing conclusions from them."

Journal of the American Statistical Association, March 1939 (review by Arthur W. Marget):

"This is an admirable piece of work—a credit to its author and to the broader project of which it is a part. For all its compactness of presentation, it gives every evidence of a determination to utilize every bit of material that can be shown to be of significance for the problem in hand; the data are treated critically and yet with imagination; and—most important of all—there is evidence throughout of an awareness of the theoretical issues which both illumine and are illumined by the data that Dr. Fabricant has so patiently assembled."

Commodity Flow and Capital Formation, Volume One, by Simon Kuznets (502 pp., $5)

Economic History Review, May 1939 (review by E. H. Phelps Brown):

"The first purpose of this work was to measure the formation of new capital in the United States in the years since the war; but as this enquiry required the measurement of the value not only of new fixed equipment but also of the additions made to all kinds of stocks, it broadened until it covered the output of commodities of all kinds. When the findings are combined with those of two independent studies, of the depreciation of fixed equipment, and of the whole national income, there results a detailed record of the whole economy [See *Capital Consumption and Adjustment* and *National Income and Capital Formation*, 1919-1935; Ed.]. . . . It is the purpose of the present volume to record the working up of the estimates stage by stage, and to tabulate data and findings in detail; the greater part of the book therefore consists in tables, and the commentary is directed chiefly to the questions of statistical method. Helped by excellent typography, this exposition is a model of fulness and clarity. Discussion of the significance of the results is largely deferred to a second volume, but some important conclusions suggest themselves even on a first perusal of the tables."

Report of the Committee on Prices in the Bituminous Coal Industry (144 pp., $1.25)

American Economic Review, March 1939 (review by Jules Backman):

"If this worth-while report by Professor Waldo Fisher and his Committee is typical of those to follow, it is a matter of keen regret that the National Bureau has been able to set up committees to survey only four other industries."

This *Report* is the first published product of the Conference on Price Research whose organization is described by Wesley C. Mitchell in *The National Bureau enters its Twentieth Year*, issued last month. There also was announced the creation, by the Conference on Price Research, of two permanent committees, one of which will in some measure fulfill Mr. Backman's hope. The Committee on Cost-Price Relationships, under Edward S. Mason of Harvard University, will cut across industrial lines. The other, on Bituminous Coal Prices, was felt desirable because the act creating the National Bituminous Coal Commission and providing for definite price fixing affords such an excellent laboratory case. Mr. Fisher's Committee is composed of H. N. Eavenson, Consulting Engineer; W. P. Ellis, Bituminous Coal Producers' Board; O. E. Kiessling, United States Bureau of Mines. John Maurice Clark is an advisory member.

One other Committee was formed after Mr. Backman wrote his review: on Distributional Costs and Pricing Policies at Retail, with Arthur Robert Burns as Chairman. Both its report and that of the Committee on Prices in the Steel Industry are in manuscript, under review by the Committees. The other three reports—of the Committees on Prices in the Automobile, Petroleum, and Textile industries—have been submitted to the Directors of the National Bureau. Upon approval they will be published as Volumes 2 and 3 of the Price Series.

The Structure of Manufacturing Production, A Cross-Section View, by Charles A. Bliss (231 pp., $2.50)

This, the 36th volume in its regular publication series, has been sent to contributing subscribers. Mr. Bliss has concentrated attention on "(1) the allocation of economic resources to the manufacture of different classes of goods; (2) the relative use of different productive factors".