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 John Backman):
"If this book's worth while report by Professor Waldo Fisher and his Committee is typical of three 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 Committee on Price Research whose organization is described by Wesley C. Mitchell in The National Bureau in Twenty Years, 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. Baldwin'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 Prices; "the Bureau's other experts". O. E. Kenney, United States commissioner ofnavigation, has the restraints have, on the whole, been missed. 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 seven years are described in detail in the Appendix to this Bulletin.

We indicate briefly the meaning of the various categories and totals. The estimate of the flow of perishable, sellable, and accountable 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 approximations of the cost of producers of durable commodities, except that the ultimate recipients are not households or individual consumers but economic enterprises. The distinction among perishable, sellable, and durable commodities is based on the duration of life to ultimate use: less than six months for perishable, from six months to three years.

The *Structure of Manufacturing Production, A Cross-Section View*, by Charles A. Bliss (335 pp., $3.00)

This, the 1936 volume in its regular publication series, has been sent to contributing subscribers. Mr. Bliss has concentrated attention on "the allocation of economic resources to the manufacture of different classes of goods; (2) the relative use of different productive factors".

**Commodity Flow and Capital Formation in the Recent Recovery and Decline, 1932-1938**

**Simon Kuznets**

Annual estimates of commodity flow and capital formation for 1934-35 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 1934 and analyzes briefly the share 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 1931 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, 1931-38. For 1934-35 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. See "Government Borrowings". Other revisions are: previous estimates for 1933 are based on data compiled at the time; the reestimates have, on the whole, been missed. 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 seven years are described in detail in the Appendix to this Bulletin.

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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 imports.1

The nine components just described are presented in Table 1 in both current and 1939 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 1939 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 Adjustments; 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 pairs 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 duplications 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, 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 here between gross commodity product and 

1Gross 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 that is 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.
National Bureau of Economic Research

1933 to 1937. In several components and in some of the subcomponents, the rise is not evident until after 1935, so that the latter year, rather than 1933, 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 the volume increases did not rise until after 1935. But beyond that the impression conveyed by Table 1 is that expansion was fairly general and continuous throughout 1936. 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 be cyclical 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. Since the comprehensive totals of gross and net commodity product rise after 1935, 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 1931-37 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 1933, 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 3 fail to reveal a break that interrupted 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 1933 to 1937 we should treat the changes in its components as to establish their share in the expansion of gross and net commodity product. Accordingly, we try 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, 3, 5, and 7 for values in current prices, and 4, 6, and 8 for values in 1929 prices). Since we wish to account for the rise in commodity product during a fixed period, the changes in the com-

ponents 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 1933 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 1933 to 1937, but also between the average values for 1933-35 and for 1936-37, and between the average value for 1933-34 and for 1935-37. The use of such averages reduces any irregular changes that may affect the single year values of 1933 and 1937, and that are reflected on the percentage distribution of changes in the timing of the expansion in the various components; and reduces the amplification of the rise in both total commodity product and its components.

Columns 1-3 and 8-10 show how important was the change in each component or 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 a significant difference in results. All three periods, for example, show a rise in the share of the rise in the flow of perishable and of producers durable commodities, and increases that of the rise in the flow of semirealizable and consumers durable commodities, residential and public constructions. Second, the adjustment for price changes reduces strikingly the share in the rise in commodity product of changes in the flow of perishable and of producers durable commodities, and raises correspondingly the percentage share of changes in the other components. This reflects a greater rise during the recent expansion, compared to most pronounced cyclical expansions in the past, in prices of perishable and semirealizable commodities than in prices of durable commodities or in construction costs.

Of the $50 billion rise in gross commodity product in current prices from 1933 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.

It might have been preferable to compute the percentage distribution of the algebraic increase in commodity products, but of the sum of the rise 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 sum of a total of all positive changes would involve several terms, the number of components and subtotals and their identity varied.

Table 2: Distribution of Changes in Commodity Product Among Changes in Its Components

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross Commodity Product</th>
<th>Gross Commodity Product Changes</th>
<th>Net Commodity Product</th>
<th>Net Commodity Product Changes</th>
</tr>
</thead>
</table>

Note: Commodity product is gross and net. Changes are computed as changes in the flow, in current prices, and in constant prices.

[4]
Commodity Flow and Capital Formation, 1932-1938

ANNUAL RISK IN COMMODITY PRODUCT, VARIOUS EXPANSION PERIODS

( millennials of dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross Commodity Product</th>
<th>Net Commodity Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>1925-26</td>
<td>6,184</td>
<td>2,010</td>
</tr>
<tr>
<td>1926-27</td>
<td>6,281</td>
<td>2,040</td>
</tr>
<tr>
<td>1927-28</td>
<td>6,372</td>
<td>2,071</td>
</tr>
<tr>
<td>1928-29</td>
<td>6,453</td>
<td>2,100</td>
</tr>
</tbody>
</table>

The share contributed by capital formation, both gross and net, to the total risk of commodity product in the recent expansion exceeded the share contributed during either the 1921-1929 expansion or, on the average, during the reference expansions. The difference in the shares of residential construction, which is included in both the recent expansion and the reference expansions, is probably the 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 expansion than during the 1921-1929 expansion. The share contributed by the recent expansion is smaller in current prices and about the same in 1932 prices. When net flow to business inventories is included, 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 than during the 1921-1929 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 1921-1929 expansion only for gross values in current prices. In all other comparisons with the 1921-1929 expansion, and in all comparisons with the reference expansions, the share during the recent expansion is either equal to or significantly greater than in earlier expansions.

Values in 1932 prices, even though lower 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 1932 prices, the share of any of the three totals of business, capital formation in the recent rise in commodity product is either equal to or significantly greater than in earlier expansions.

The conclusion 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 1921-1929; the shares of infant goods, durable commodities, 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 1921-1929 expansion were business construction, and, somewhat less distinctly, public construction. The difference in the shares of residential construction during the two expansions is, perhaps much more than for other components, to differences in the timing of the rise.

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 amounts 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 the recent expansion, which is to be expected. On the average for almost one-third of the total rise in commodity product, during both the recent expansion and the reference expansions.

Further, the relative intensity of participation in the rise in commodity product during the recent expansion is closely similar to the intensity of the recent expansion during the reference expansions. The relative intensity of the relative importance of the rise in the given component, relatively to its average value, is exactly equal to the relative importance of the average value of the given component in the average value of commodity product. Such a ratio would indicate that the relative amplitude of the rise in the component, relatively to its average value, is exactly equal to the amplitude of the rise in commodity product relatively to its 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-
Commodity Flow and Capital Formation, 1932-1938

The rates of relative intensity of participation, compared 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, thereby eliminating the percentage distribution of average values for 1929-37.

d) Thus only the rates based on the average values for each expansion can yield a comparison between the most recent and earlier expansions, as in Table 3. 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 column 3 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 5, 9, 11 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 rise 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 1939 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 1931 to 1939.

4. Extent of Recovery

The preceding analysis suggested that the absolute magnitude of the 1932-37 expansion was, for most characteristics, 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 1939 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 prevailing 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 change only; whereas the previ...
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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 1938-9.

b) Compared with pre-depression levels, the value of consumers' outlays 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 1936-7, 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 16 to 21 per cent of pre-depression levels, and the net totals reveal 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 of 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 net flow to inventories that serves equally as an account for the relatively favorable showing of capital formation and of the first total of capital formation for business use (lines 12 and 23). 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' outlays 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. In this component there is a tendency to bring down the data for 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 1938-9). These shortages are greater than for perishable or producers' durable equipment.
durable commodities, but much smaller than for residential or business construction.


The contraction of the 1929-1932 recession was followed by an expansion of 1932-1937, which was larger in both absolute and relative terms than any previous one. Why were the components of the demand for new construction so much less responsive to changes in interest rates during this period than they had been during the 1920s? Did the factors that caused the 1929-1932 contraction have a lasting effect on the demand for new construction?

The analysis is based on the assumption that the demand for new construction is determined by the forces of supply and demand, and that the supply of construction is a function of the price and the interest rate. The demand for new construction is determined by the willingness and ability of people to purchase it, and the willingness and ability of builders to supply it.

Table 1 shows the relationship between the interest rate and the demand for new construction. The table is divided into two parts: the left part shows the demand for new construction, and the right part shows the interest rate. The upper part of the table shows the demand for new construction, and the lower part shows the interest rate.

The relationship between the interest rate and the demand for new construction is shown in the upper part of the table. The demand for new construction increases as the interest rate decreases. This is because the interest rate is a cost of borrowing money, and lower interest rates make it less expensive to borrow money. The demand for new construction also increases as the price of new construction increases. This is because the price of new construction is a measure of the value of new construction, and higher prices make it more attractive to invest in new construction.

The relationship between the interest rate and the demand for new construction is shown in the lower part of the table. The interest rate increases as the demand for new construction increases. This is because the demand for new construction is a measure of the value of new construction, and higher demands make it more attractive to lend money.

Table 1 shows that the demand for new construction is responsive to changes in the interest rate, and that the relationship between the interest rate and the demand for new construction is non-linear. The relationship is characterized by a threshold value of the interest rate, below which the demand for new construction increases rapidly, and above which the demand for new construction increases more slowly.

This threshold value of the interest rate is 5%, and the demand for new construction increases by 10% for every 1% decrease in the interest rate below this threshold value. The demand for new construction increases by 5% for every 1% increase in the interest rate above this threshold value.

The cause of the threshold value of the interest rate is the existence of a limit on the quantity of new construction that can be financed at any given interest rate. This limit is determined by the amount of money available for new construction, and the amount of money available for new construction is determined by the supply of money and the demand for money.

The supply of money is determined by the central bank, and the demand for money is determined by the public. The central bank can increase the supply of money by borrowing from the public, and the public can increase the demand for money by borrowing from the central bank.

The relationship between the supply of money and the demand for money is shown in the upper part of the table. The supply of money increases as the demand for money increases. This is because the demand for money is a measure of the value of money, and higher demands make it more attractive to lend money. The supply of money decreases as the demand for money decreases. This is because the demand for money is a measure of the value of money, and lower demands make it less attractive to lend money.

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The relationship between the supply of money and the demand for money is characterized by a threshold value of the demand for money, below which the supply of money increases rapidly, and above which the supply of money increases more slowly.

This threshold value of the demand for money is 10%, and the supply of money increases by 10% for every 1% increase in the demand for money below this threshold value. The supply of money increases by 5% for every 1% decrease in the demand for money above this threshold value.

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Commodity Flow and Capital Formation, 1932-1938

The estimates of commodity flow and gross capital formation for 1938 are subject to a wider margin of error than those 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.

The decline from 1937 to 1938 was substantial, in both current and 1939 prices. We may compare it with the decline in gross commodity production during the reference contractions since 1919.

**Change in Gross Commodity Product from 1937 to 1938 Compared with Changes During Reference Contractions (millions of dollars)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Change in Current Prices</th>
<th>Change in 1939 Prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929-1933</td>
<td>-10,974</td>
<td>-10,974</td>
</tr>
<tr>
<td>1920-1921</td>
<td>-4,574</td>
<td>-4,574</td>
</tr>
<tr>
<td>1921-1922</td>
<td>-4,409</td>
<td>-4,409</td>
</tr>
<tr>
<td>1929-1931</td>
<td>-6,745</td>
<td>-6,745</td>
</tr>
</tbody>
</table>

The decline from 1937 to 1938 was less substantial than during 1929-33, even when the latter is reduced to a per year basis; but more than substantial than the declines in the preceding reference contractions, with the sole exception of 1920-21 in current prices. Were we to interpret the absolute change in 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 1929-31 and the milder contractions of the first post-War decade.

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 factor compensated for a decrease in 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, flow of producers' durable commodities, and to a smaller extent, flow of consumers' durable 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 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 1939 prices, when the values for 1938 are compared with those for 1937.

Because the reference contractions since 1919 are marked by divergent behavior of components, it is difficult to establish for them the percentage distribution of the declines in commodity production among the changes in the components. But, generally, the contractions of 1920-21, 1921-22, and 1929-31 are marked by extraordinarily large percentage changes as compared with 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' durable and producers' durable commodities; and by an inconsistent behavior of all other components. The contraction of 1929-31, 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 1929-31 as a whole, but also of the distribution of the decline in gross commodity production in the first year of the depression, viz., from 1929 to 1930.

The pattern of the decline in gross commodity product from 1929 to 1930 resembles that of the decline during the reference contractions of 1920-21, 1921-22, and 1929-31 in two respects: the failure of the flow of perishable and semiperishable commodities, when measured in constant prices, to contract; and the very high share that the decline in the net flow to inventories contributed 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 1929 to 1930 dissimilar to the behavior of a depression 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 from 1929 to 1930. This makes it similar to that from 1937 to 1938, for none of the preceding three contractions was characterized by a decline in both these branches of commodity activity. But in view of the rather small magnitudes of the contraction in reference commodities from 1929 to 1930, it may be doubted that the similarity in this respect of the recent decline to that of 1929-30 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 products in 1929 prices during the recent expansion was either equal to or slightly less than during the 1920-19 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 1920-19 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 1920-19 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 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. The sharp decline in capital formation exhibited in net flow to inventories; of total business capital formation excluding net flow to inventories; of total private durable capital formation. They show by the end of the recent expansion, or 1929 or 1929-31, the relative magnitudes 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 1921 or 1923-24 and in their rise during the subsequent expansion suggests that the greater the absolute or relative decline during the contraction the greater the relative rise during the expansion, and that differences in the severity of the decline during the contraction are the dominating factors in determining differences in the extent of rise during the end of the expansion as compared with pre-depression levels. These 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. Therefore we may discuss broadly the components involved is not important additional 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 poignantly that the failure to recover by 1927 or 1928 was due less much to the weakness of the prices of reference commodities than to the severity of the contraction that terminated in 1921 or 1923-24.

e) The decline in gross commodity product from 1927 to 1928, so far as it can be measured now, is less than substantial that from 1929 to 1930, yet it, too, is related to the failure to raise business construction in 1926-1927 as was sigificantly larger than the declines in the reference contractions of 1920-21, 1921-22, and 1929-31 (with the single exception of that of 1920-11 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 1927 to 1928. Because of the unusually large share contributed to the 1927-28 decline by net flow to inventories and the failure of the flow of perishable and semipерishable commodities, in 1929 prices, to keep up, the relative magnitudes as compared with the declines in gross commodity product in the reference contractions of the first post-War decade than in the contraction of 1929-31 (even when the later 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 an event subject to vagaries 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 movements compared with the movement of commodity product. We thus deal with data that well a deal of the underlying movements; 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 1919, since it is heavily involved in reference expansions that annual estimates are especially deficient.

Another source of difficulties appears apparent in any attempt to interpret now fully our temporary measures. We may 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 1915-19; that the recession began in 1927 and continuing through at least the early part of 1938 is, therefore, likely to be short lived, with the next expansion not likely to be long sustained in the composition of business capital formation; that during the subsequent expansion private construction may remain a standing within
Commodity Flow and Capital Formation, 1932-1938

APPENDIX

Derivation of Preliminary Estimates for 1934-1938

1. Flow of Commodities to Consumers

** Perishable**: From the retail sales estimates of the Department of Commerce (Domicile Commerce, March 20, 1939) we took sales by stores in the following groups: foods, beer and liquor, eating and drinking places. The totals were reduced in an index to extrapolate the 1935 figure of the cost to consumers of perishable commodities. By combining the Bureau of Labor Statistics wholesale price indexes for foods, alcoholic beverages, 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 1935 figure for perishable commodities in current prices by that in 1939 prices; see Commodity Flow and Capital Formation, Volume One, Table V-10), we derived an index needed in the adjustment for price changes.

** Non-perishable**: 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 1935 figure. The corresponding price index was secured from the Bureau of Labor Statistics indexes of prices of clothes, textile products, and automobiles and tires and tubes to extrapolate the price adjustment index previously obtained by us for 1933 (Commodity Flow, Table V-10).

** Consumers' Durables**: Retail sales of the automobile, furniture, and household goods, and jewelry stores, as estimated by the Department of Commerce for 1938, 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 homes. Furnishing goods and furniture were priced, insofar as possible, by separate report, and the resulting indexes were combined to arrive at the final price index. The index was used to extrapolate the 1933 prices to 1939 prices.

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 these data as indices of the movement of commodity groups; and (c) the reliability 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 secure: 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 sales 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.

2. Producers' Durables

The 1933 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 1933 and 1937 Censuses of Manufactures. Figures for 1934 and 1936 were estimated from the movement of gross incomes, 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 of automobiles, for 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 estimates of the Automobile Manufacturers Association. A price index for 1934-37 was secured by using Solomon Faber's index of producers' durable goods prices 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 extrapolation.

Values for horses, mules, and milk cows in both current and 1939 prices were estimated by the method used in Commodity Flow (see notes to Table V-3 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 the method of adjustment for difference from 1936 values. In 1938, 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.

3. Construction

Residential: The components of total residential construction were made in the procedure followed for 1933 (Commodity Flow, Table V-1 and notes). David L. Wickers' estimates of new residential construction were utilized directly; major additions and alterations were approximated from the permit data; and dwellings were estimated in the same manner as previously.

For 1936-38, however, the estimates of new residential construction, excluding farms, were extrapolated by the Department of Commerce and published in its Survey of Current Business, December 1938.

Business: Nonresidential construction, excluding farms, was estimated from Dodge consonant data for commercial, industrial, 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 reports. 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-1, 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 reflects the values for 1933 and 1935 in Commodity Flow, Table V-3.

The construction orders for 1937 and 1938 are the same degree of accuracy as those for earlier years. The estimates for 1938 are probably less reliable although two independent investigators, Harold Wolfrith (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.

4. Inventories

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 in minor.

b) Manufacturing: The availability of Statistics of Income for 1934-36 made it possible to estimate corporate inventories for those years as outlined in Commodity Flow, Tables VII-1 and notes. Since the method was carried forward to 1935, the data for the last two years were also extrapolated from the published data for 1934 and 1935.
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Translation of these construction inventory estimates into 1931 prices and the subsequent calculation of net changes was accomplished by means of the price index used for earlier years (Commodity Flow, Note C, table VI-1, supra), the Bureau of Labor Statistics wholesale price index for building materials. The 1935 adjustment to this index (see Note C) was applied in all succeeding years.

b) 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 1931-35 (Domestic Commerce, April 10, 1935). 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 estimates 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 1934 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. In order to make estimates for the other years the indexes of inventory-sales ratios were calculated and applied to the adjusted 1933 ratio. For 1934 the movement between 1932

and 1935 and 1932 and 1933 in inventories and sales of commodities engaged in trade (Statistics of Income) was used. For 1935 and 1936 an index based on the Census Survey of Wholesale Distribution was used and for 1931 and 1932 an index derived from Dun and Bradstreet data (Dun's Review, May 1933).

A similar technique was followed in estimating retail inventories. Of course, retail sales estimates (Domestic Commerce, April 10, 1935) and inventory data were used wherever available, i.e., except for the 1934 inventory-sales ratio index, which again was derived from all trade correcions. 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 comparison 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. The 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 merchandise from 1932 to 1938 (for derivation see VI below). Its components may be used to render the inventory estimates in Table 1 comparable with those in Commodity Flow.