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Appendix C

INVENTORY STATISTICS

In this appendix will be found a summary of the material underlying the estimates for the net change in inventories in current prices, annually for all groups (Table 3) and quarterly for Manufacturing and Distribution (Tables 10 and 11); and also the quarterly estimates for inventory profits in Manufacturing (Table 18). The data available for the measurement of inventories are surveyed here in some detail on account both of the magnitude of the quantities involved and of the poverty of our information concerning them.

§1. *Conceptual Framework*¹

In accordance with the treatment already described in Chapter II, the physical change in inventories held, measured in current prices, constitutes an element of outlay; while profits accruing through the revaluation of inventories, insofar as they influence accounting measures of income, have to be deducted in the computation of our income totals. Both elements have therefore to be estimated, and in fact the two computations are closely related.

The inclusion in income of profits and losses due to inventory revaluation may occur in various ways, but especially when the cost of materials is figured as the sum of purchases plus initial inventory, minus final inventory. This is the method ordinarily required by the Bureau of Internal Revenue in computing income for tax purposes, and it results, whenever revaluation occurs, in the appearance of profits and losses whose size is determined directly by the accounting methods upon which the revaluation in question is based.

Thus the reported cost of goods sold during any period of time t

$$= \text{purchases} + V_0 - V_t$$

¹ My own thinking about these matters has been greatly clarified through discussion with my friend and colleague Rollin F. Bennett.

where V_0 and V_t are the initial and final inventory, respectively, in accounting valuation. The true cost of goods sold, on the other hand

$$= \text{purchases} - \int_0^t P \mathcal{Q}' dt$$

where \mathcal{Q}' is the rate of change in the physical volume of inventory held, and P is the current level of prices. Subtracting, we have for the inventory profit included in reported income

$$V_t - V_0 - \int_0^t P \mathcal{Q}' dt$$

i.e. the change in the value of the inventory (in accounting valuation) minus the net change in the inventory in current prices. This formula holds irrespective of the methods of inventory valuation in vogue, provided only that the cost of goods sold is computed in the manner indicated.

For practical purposes we have to assume that

$$\int_0^t P \mathcal{Q}' dt = \bar{P}(\mathcal{Q}_t - \mathcal{Q}_0)$$

where \bar{P} represents the mean level of prices which obtains during the interval. We assume, that is, that the value of the inventory change is correctly represented by the net physical change multiplied by the average price level prevailing during the time period considered.

It should be noted that an analogous assumption underlies the estimation of some, but by no means all, other elements of income and outlay. Where corporate incomes are reported directly to the Bureau of Internal Revenue, and where payrolls or the value of products are reported directly to the Bureau of the Census, we must assume that the integration in question has been carried out by the reporting enterprise. Where, on the contrary, payrolls or the value of output are computed by multiplying man-days by an average wage per shift, or tons by an average price per ton, use of the above approximation is in effect being made.

In most such cases the failure actually to carry out the required integration is of small importance, and errors resulting from resort to the approximation cannot be large. In the case of inventory changes and inventory profits, on the other hand, the fact that \mathcal{Q}' may be negative as well as positive, and is subject to sharp fluctua-

tions, makes the above assumption considerably less secure. We know that

$$\int_0^t P Q' dt \rightarrow \bar{P}(Q_t - Q_0)$$

as $t \rightarrow$ zero, and the error involved is therefore smaller the shorter the time unit upon which the computations are based. For this reason the measurement of the inventory elements in outlay and income at quarterly rather than at annual intervals has particular point. In precision quarterly estimates are usually inferior to the annual estimates from which they are derived. For the particular case of inventory changes and profits, the need to assume that

$$\int_0^t P Q' dt = \bar{P}(Q_t - Q_0)$$

renders quarterly series, from this point of view at least, superior to series derived annually. Although quarterly inventory statistics are unfortunately exceedingly deficient for quite other reasons, it can easily be shown that the length of the time period used in the computations has an important effect upon the results. For series derived quarterly may be summed year by year and compared with those obtained directly on an annual basis, the annual data used as a starting point (figures for year-end inventories) being of course the same in the two cases. Such a comparison is made in Table 35 of this appendix, and it will be seen that in some years (e.g. 1921, 1930 and 1937) the two computations differ markedly.

§2. *Statistical Treatment—(1) Net Change in Current Prices*

The procedures used here in deriving quarterly estimates for the inventory items are based directly on those described by Kuznets in his compilation of annual figures.² The method may be briefly recalled in outline. Year-end inventories in accounting valuation are derived from balance sheet data or (especially in the case of Wholesale and Retail Distribution) from inventory-sales ratios. The net change in the value of inventories between year ends, observed in this fashion, is then divided into two parts. One is the net change in physical inventories held, valued in current prices, which is a constituent of capital formation; the other is the profit or loss accruing from the revaluation involved in the accounting procedures. The

² See *Commodity Flow and Capital Formation*, Vol. I (National Bureau of Economic Research, 1938), Part VII; *Studies in Income and Wealth*, Vol. I (1937), pp. 145-72.

second component may be regarded as that part of the gross change in the value of inventories during the year which cannot be accounted for by the actual physical accumulation or decumulation measured in current prices. Although it may be quite a substantial item, this inventory profit cannot be gauged directly, but must be obtained as a residual at the end of the calculation.

We therefore begin by deriving the net change in business inventories in current prices. This can be computed on a quarterly basis only for Manufacturing and Distribution. The work falls into three parts.

(a) *Manufacturing Inventories, 1921-28.* It is possible to find physical inventory series on a monthly basis (mainly Department of Commerce indexes) which are apparently appropriate to the six divisions of Manufacturing shown in Table 31. Where series for raw materials and for manufactured products were available for the same group, these were combined with the use of weights derived from scattered data supplied by Epstein and Clark.³ These provided moderately satisfactory interpolating media when applied to corresponding year-end inventories in 1929 prices from worksheets underlying Table VII-8 in Kuznets' *Commodity Flow and Capital Formation*. Series have been collected also by the Department of Commerce for paper and rubber; but these had to be rejected. The interpolation for the six groups is carried out in Table 31. The net quarterly changes disclosed in that table were then multiplied by quarterly averages of the price series shown in Table VII-7 of *Commodity Flow*. The net changes in current prices so obtained are shown in the first six columns of Table 32. The total for these groups is then adjusted for seasonal variation, and a rough allowance is made for the remaining groups for which we have no interpolating media.

(b) *Manufacturing Inventories, 1929-38.* During the depression, while inventory changes become larger, the agreement between the monthly series for commodity stocks and the global data for year-end inventories in 1929 prices deteriorates rapidly. To pick an example at random, deflated year-end inventories for food and beverages (after elimination of tobacco) report inventory accumulation during each of the three years 1930, 1931 and 1932, followed by a sharp decline of inventories during 1933. The Department of Commerce series for commodity stocks, both for raw food and for food products, indicate an exactly contrary movement. The agreement in

³ Ralph C. Epstein and Florence M. Clark, *A Source Book of Industrial Profits* (U. S. Department of Commerce, 1932).

1934 and 1935 is better, but in 1936 and 1937 the respective movements of the two kinds of data again conflict. Similar difficulties in most other industrial divisions are met with after 1929. As already indicated, the monthly series for paper and rubber disagreed so completely with the deflated annual data throughout the period that they had to be rejected altogether.

The conflict of evidence between data for commodity stocks and figures for the reported value of inventories is a serious problem for anyone who wishes to make use of inventory statistics. The particular discrepancies noted cannot be due to variation as between the behavior of raw and of finished inventories, for in the Department of Commerce data these are segregated, and it frequently happens that no conceivable combination of them will agree with the year-end figures obtained by deflation. On the other hand the deflated data rest upon assumptions concerning accounting practice,⁴ the rate of turnover, and the appropriateness of the price series used in the deflation, which may or may not be justified. The actual procedures adopted in the present study were chosen for the most part because they were the only ones available, not because they inspired any special degree of confidence. The deflated annual data have to be used in any case, because they are the only global estimates in existence. Up to and including 1928 the physical volume indexes were used for interpolation for a similar reason.

Since 1929, however, an alternative method of interpolating inventories in Manufacturing is available, for the National Industrial Conference Board has assembled monthly indexes for the value of manufacturing inventories⁵ which agree tolerably well with global year-end inventories in accounting valuation derived from the *Statistics of Income*.⁶ The NICB data, already adjusted for seasonal variation, are broken down only between durable and nondurable commodities, and do not include foods. In spite of these disadvantages, the two indexes were employed as shown in Table 33 to obtain estimates of the net change in inventories in current prices.

⁴ There is some evidence to support the assumptions regarding accounting practice. For example the study of 826 manufacturing companies entitled *Prevailing Practices in Inventory Valuation* (National Industrial Conference Board, 1938) indicates that the lower-of-cost-or-market is the commonest, but by no means the only, basis used in valuing inventories.

⁵ See *Economic Record*, Supplement, Dec. 26, 1940.

⁶ See Kuznets, *Commodity Flow and Capital Formation*, Vol. I, Table VII-6. Data for recent years are taken from an unpublished study by Moses Abramovitz of the National Bureau of Economic Research.

for Manufacturing as a whole. The price indexes used in deflating the accounting measures, and in revaluing the inventory change currently quarter by quarter, were compiled specially for the purpose by Moses Abramovitz of the National Bureau of Economic Research in connection with a study of inventory movements upon which he is engaged.

The results are not altogether plausible. For example the series which emerges (column 7 of Table 33) shows considerable decumulation in the second and third quarters of 1933, at a time when the value of inventories was admittedly rising, and during a period which is usually associated with inventory accumulation rather than the reverse. Similarly the very large increase in inventories in the third quarter of 1937 is difficult to credit. If the NICB indexes are to be relied upon, and their agreement with the global year-end estimates suggests that they are, these implausibilities imply that there is something wrong with the mechanism of deflation: that, in other words, we have made too large an allowance for the influence of price changes, and have divided the gross movement in the value of inventories between inventory change and inventory profit in the wrong proportions. If this supposition is correct, errors in the inventory change as shown in Table 33 should lead to compensating errors in our estimates of profits and losses arising through inventory revaluation. To this point I shall return shortly.

The use of a series in accounting valuation as the interpolating medium, in the manner indicated, assumes that the same accounting methods are followed, whatever the date for which the inventory is reported. The general employment of a perpetual inventory, with revaluation once a year at stocktaking, would of course throw the calculations hopelessly out of line in years of rapid price change. If such methods were usual, inventories at fiscal year ends and at intermediate dates would require deflation according to entirely different principles. Besides assumptions about accounting methods (cost or market, age of inventory, etc.), we have also to make assumptions about the composition of the inventory in order to select appropriate price indexes. The series for inventory change and inventory profit so obtained are comparatively insensitive to the price index used for revaluing the physical increment in terms of current prices. But the ultimate results are, on the contrary, quite sensitive to slight alterations in the deflation procedures; that is, in the assumptions made concerning both the composition of the inventories themselves, and the methods employed by accountants in their valuation.

Insofar as errors result from the inappropriateness or inadequacy

of the deflation procedures adopted, no means exist of gauging their size or direction. A radical improvement in method can be achieved only, if at all, by a much more elaborate analysis than any which could be contemplated in the present study. The series in Table 33 are, despite their defects, almost certainly superior to any that could be derived, for the period in question, from data for the movement of commodity stocks, and they have been used, though with some hesitation, in deriving the estimates for outlay.

(c) *Distributive Inventories.* The same general methods as those employed in Table 33 are applied in Table 34 to obtain a value for the net change in retail inventories, measured in current prices. The basic series is in this case the Federal Reserve Board index of department store stocks, and the price indexes used were specially computed from BLS data. We do not know how representative department stores are for this purpose, and since the Reserve Board index is published only in round numbers we cannot expect the result to be very accurate. Nevertheless, it seemed better to provide some allowance for changes in distributive inventories than to make none at all. Although the Reserve Board also at one time collected data for wholesale inventories, these were never published and are reported to be of doubtful value. The annual net change in wholesale inventories (fortunately less important than the retail component) as estimated by Kuznets has therefore been arbitrarily apportioned on a quarterly basis. Together with the data already set forth, these series yield a total, in the last column of Table 34, for the quarterly net change in current prices in Manufacturing and Distributive inventories as a whole. The calculation is unsatisfactory enough, but it will have to serve.

The net annual change in inventories provided by our figures may now be compared with that given by Kuznets. This is done, for Manufacturing and Distribution combined, in Table 35. It will be seen that the agreement is close except in 1921, 1930 and 1937. The larger inventory accumulation we report for 1921 and 1930 is due to the fact that in both years, according to our measures, the increase in inventories occurred predominantly during the first half of the year. Prices were falling in both years: consequently the physical increase for the year is valued on the average, when computed quarterly, at prices which are higher than their mean level for the year.⁷ Similarly in 1937 the in-

⁷ The difference stems from the fact that Kuznets revalues the net change (1929 prices) during the year by the average price level for the year, whereas we do the same thing by quarters, thus approximating more closely the value of the integral given in §1 above.

crease in inventories appears to have taken place largely during the the middle quarters of the year, while prices were at their peak, which again explains the larger accumulation reported by our measures for that year. It appears, then, that the revisions of the Kuznets data are plausible. On the other hand, we have no quarterly figures for the inventory change in divisions other than Manufacturing and Distribution. The best plan has seemed to be to sacrifice strict comparability between quarterly and annual measures of outlay. Accordingly in Table 3 of the main text I have combined the revised annual data for Manufacturing and Distribution with the Kuznets data for the remaining divisions (see Table 35, this appendix). In Tables 10 and 11, however, where quarterly estimates are required, I have confined the data presented to the figures for Manufacturing and Distribution.

§3. *Statistical Treatment—(2) Profits and Losses from Revaluation*

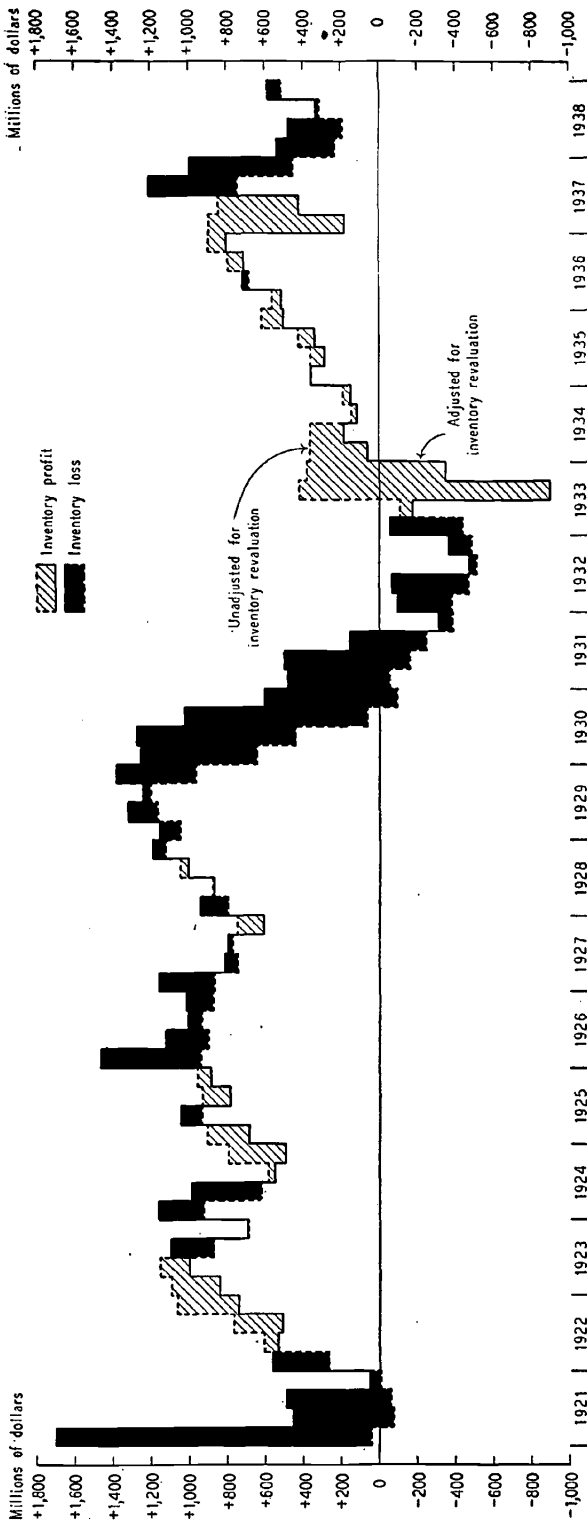
Just as the outlay totals require the insertion of an estimate for the net change in business inventories in current prices, so the income totals require the deduction of an estimate for profits and losses arising through the revaluation of these inventories. Since the gross change in the accounting value of inventories during any period is composed of the sum of these two items, and since we know or can calculate the gross change, and have already derived the net change in current prices, we can in principle compute the inventory profit by taking the difference. The result of this operation for Manufacturing is given in the second column of Table 36. In the first column is shown the series for residual income⁸ in Manufacturing as it appears in Table 12. By subtraction of the second column from the first we obtain a series for residual income adjusted to exclude inventory profits.

These data are presented graphically in Chart IX. It will be seen that as computed the adjustment, at least in Manufacturing, is substantial, and that in direction it corresponds closely to what one might expect from a general knowledge of price movements. As may be observed from the chart, the instability of the adjusted series is very marked. That residual income should be more unstable after removal of inventory profits than before appears something of an anomaly. The adjusted series, which is intended to measure profits from manufacturing as distinct from inventory revaluation, should, one supposes, be more closely correlated with sales volume, and should fluctuate less,

⁸ The reader may be reminded that residual income for Manufacturing consists of dividends, withdrawals by entrepreneurs and business savings.

CHART IX

RESIDUAL INCOME, MANUFACTURING, BEFORE AND AFTER REMOVAL OF INVENTORY PROFIT
(Seasonally Adjusted)



Based on Table 36

rather than more, violently than it did before adjustment.⁹ For example, to suppose that profits so adjusted were higher in the first quarter of 1921 and lower in the third quarter of 1933 than in any other quarter of the period—a conclusion suggested by inspection of the chart—will doubtless appear to some readers, as it does to the author, patently absurd. Moreover, the violent movements in the first quarter of 1926, and in the first and third quarters of 1937, in the adjusted series, are far from plausible. The inference is very strong that the estimates for inventory profits, although in the right direction, contain a large element of exaggeration. A similar series (not shown), computed quarterly for inventory profits in Distribution, showed very much the same kind of movement, plausible in direction but excessive in size, as that obtained for Manufacturing.

The inventory profits for Manufacturing, shown quarterly in Table 36, are reproduced in annual form in Table 37, where they are compared with similar estimates derived on an annual basis by Kuznets. The agreement is very close except in 1930: the discrepancy in that year is explained by accumulation in the early months followed by decumulation later in the year, the two tendencies in combination causing average inventories held during the year to be considerably larger than they were either at its beginning or at its end. The inventory loss is therefore more substantial when computed quarterly than when derived annually for that year.

The quarterly series presented here for inventory profits in Manufacturing is obtained on substantially the same principles as, and may serve broadly as an interpolation of, the corresponding annual series given in *National Income and Its Composition*.¹⁰ If, therefore, the former series exaggerates the absolute magnitude of the adjustment required in order to remove inventory profits and losses from accounting measures of residual income, the latter also must be an overstatement.¹¹ Some further light on the general plausibility of the annual inventory profits derived by Kuznets (and therefore also of the quarterly estimates considered above) may be gained by an inspection of the annual data for residual income after removal of inventory profits

⁹ Both series still include profits and losses derived from the sale of capital assets; but this qualification does not affect the substance of the argument advanced here.

¹⁰ See Chapter 8 and Table VII (National Bureau of Economic Research, 1941).

¹¹ It is impossible to make similar comparisons, for quarterly residual income before and after adjustment, in other groups. For Distribution the residual income series is too unreliable to allow a valid comparison of this sort, while for other groups quarterly inventory data are not available.

computed in the manner indicated. The estimates in question are shown on the right hand side of Table 37. It is not easy to believe that profits in Manufacturing (apart from inventory revaluation) were higher in 1920 than in 1929;¹² it is still less easy to believe that profits in Distribution were higher, not only in 1920 but in 1921 also, than in 1929, and in 1938 than in 1937. The data for Manufacturing and Distribution are particularly hard to accept when compared with the behavior of residual income (after adjustment) for all other groups combined, in which of course inventory profits are much less important, and the error caused by an erroneous adjustment, if such an adjustment has been made, would be much smaller.

It has already been indicated that the measurement of the inventory profit is tied up with the measurement of other items in such a way that, if we conclude that the estimates exaggerate its magnitude, estimates for other items must contain compensating errors. That is to say, either the gross change in the accounting value of year-end inventories must be at fault, or the net inventory change in current prices must be in error. General considerations suggest that perhaps the latter is more likely to be the case, in view of the uncertainties which surround the accounting basis of inventory valuation, and the difficulty of applying appropriate deflation procedures.

§4. *Conclusion*

The various considerations advanced here have led to a somewhat anomalous treatment of inventory revaluation in the present study. Since there is no simple method of correcting for the errors involved, and since an elaborate investigation was out of the question, available estimates of the adjustment required for the income totals had either to be included or omitted: there was no alternative. In the annual income series in Tables 4 and 5 of the main text, for the sake of the convenience arising from easy comparability with the National Bureau totals, the adjustments made by Kuznets, although criticized above, have not been disturbed. In the quarterly income series in Table 18, on the other hand, there has been deducted only the inventory profit computed for Manufacturing. The fluctuation in a corresponding series computed for Distribution (not shown here) was similar, as indeed it must be owing to correlation between price movements. But since the series for Manufacturing is believed to overstate the adjustment necessary in that industrial division, it was allowed to stand for the adjustment needed in the economy as a whole.

¹² The Federal Reserve Board's revised index of manufacturing production (1935-39 = 100) stood at 74 in the first year and 110 in the second.

So much for the treatment actually adopted in computing the outlay and income totals of this study. The purpose of the foregoing pages is primarily to underline the extent of our ignorance rather than to justify the particular treatment chosen. Although the attention which could be devoted to the subject in the course of the present study was necessarily somewhat limited, there is little to suggest that a more thorough analysis of existing materials could do much to clarify the situation. What seems most needed is the collection of new materials through a study in the field; probably it is now too late to do this for any but the most recent period, and the chances are we shall never know exactly what happened in the twenties and thirties. For the future the enterprise of the Department of Commerce in starting a comprehensive monthly survey of the value of manufacturing inventories since 1939 affords ground for encouragement. A study of the composition of inventory holdings as between raw materials, goods in process and finished goods, is promised,¹³ and should facilitate the future reconciliation of the behavior of the deflated value of inventories and of the level of physical commodity stocks—a reconciliation that has been exceedingly troublesome up to the present.

The related problems as to age of inventory and character of accounting valuation must continue to remain obscure until these questions are answered simultaneously and in conjunction with the reporting of the inventory data themselves. Only so can inventory statistics have any precise meaning, either in physical terms or in terms of current money values. Moreover, manufacturing inventories account for barely two thirds of all business inventories,¹⁴ and improvement in the data covering distributive inventories, for example, is at least equally urgent.

¹³ Howard C. Grieves and William C. Truppner, "Monthly Industry Survey," *Survey of Current Business* (September 1940), p. 7.

¹⁴ See Simon Kuznets, *Commodity Flow and Capital Formation*, Table VII-1.

TABLE 31

END-OF-QUARTER INVENTORIES, 1929 PRICES,
SELECTED MANUFACTURING GROUPS, 1921-28^a

All Data before Adjustment for Seasonal Variation

Millions of dollars

Year and Quarter	Food and Beverages ^b	Tobacco ^c	Chemicals ^d	Textiles and Leather ^e	Lumber, Stone, Clay and Glass ^f	Metal Products ^g
	(1)	(2)	(3)	(4)	(5)	(6)
1920						
iv	1,366	289	712	2,576	980	2,994
1921						
i	1,401	364	953	2,386	960	3,819
ii	1,207	334	895	2,501	926	3,588
iii	1,051	309	983	2,606	887	3,311
iv	978	312	815	2,788	885	3,000
1922						
i	1,173	357	894	2,600	861	3,403
ii	1,110	323	996	2,640	760	2,813
iii	1,011	291	1,144	2,585	777	2,676
iv	1,080	298	1,410	2,812	848	2,847
1923						
i	1,206	369	1,395	2,597	765	2,962
ii	1,056	340	1,371	2,700	809	3,198
iii	1,157	312	1,389	2,523	902	3,531
iv	1,199	330	1,604	2,589	958	3,816
1924						
i	1,249	395	1,635	2,420	932	3,671
ii	1,105	369	1,439	2,349	1,018	4,296
iii	1,226	345	1,343	2,287	989	4,389
iv	1,338	343	1,408	2,648	1,018	4,198
1925						
i	1,390	407	1,411	2,341	1,018	4,620
ii	1,227	369	1,251	2,444	1,039	4,472
iii	1,227	351	1,335	2,456	989	4,414
iv	1,386	364	1,450	2,760	1,085	4,771
1926						
i	1,398	408	1,389	2,840	1,108	4,861
ii	1,460	374	1,199	2,804	1,110	4,668
iii	1,572	354	1,294	2,714	1,062	4,222
iv	1,624	368	1,590	2,847	1,239	4,268

TABLE 31 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)
1927						
i	1,618	416	1,680	2,370	1,208	4,059
ii	1,533	369	1,381	2,396	1,154	4,118
iii	1,717	361	1,387	2,445	1,201	4,205
iv	1,695	385	1,590	2,747	1,277	4,227
1928						
i	1,918	400	1,590	2,795	1,132	4,509
ii	1,691	346	1,355	2,709	1,007	4,049
iii	1,758	336	1,408	2,483	1,072	3,942
iv	1,829	351	1,675	2,766	1,186	4,044

^a This table is derived by interpolation of the basic data underlying Table VII-8 in *Commodity Flow and Capital Formation*, the first of the three variants there shown (cost or market, whichever is lower, and an average turnover of two months for perishable and three months for semidurable and durable commodities) being used. As at so many other points in the work, I have again to thank Kuznets for the use of his unpublished worksheets.

^b Quarterly interpolation by Department of Commerce indexes of commodity stocks: manufactured foods, 1; raw foods, 2.

^c Stock of tobacco (*Survey of Current Business*) valued at \$20 per 100 lb. Not all of these stocks are held by manufacturers, however.

^d Interpolation by Department of Commerce indexes of commodity stocks: manufactured chemicals, 3; raw chemicals, 1.

^e Interpolation by Department of Commerce indexes of commodity stocks: manufactured textiles, 12; raw textiles, 1; leather, 6.

^f Interpolation by Department of Commerce indexes of commodity stocks: lumber, 17; stone, clay and glass, 2.

^g Interpolation by Department of Commerce indexes of commodity stocks: manufactured iron and steel, 4; manufactured nonferrous, 1; raw metals, 1.

MANUFACTURING INVENTORIES: DERIVATION OF NET CHANGE,
CURRENT PRICES, 1921-28

Net Changes, Current Prices, by Groups: Columns 1
to 7 before Adjustment for Seasonal Variation^a

Millions of current dollars

Year and Quarter	(1) Food and Beverages	(2) Tobacco	(3) Chemicals	(4) Textiles and Leather	(5) Lumber, Stone, Clay and Glass	(6) Metal Products	(7) Total (1 to 6)	(8) Column 7 Seasonally Adjusted ^b	(9) Remaining Groups ^c	(10) Total Manu- facturing (8 and 9)
1921										
i	+34	+150	+307	-204	-24	+1,052	+1,315	+1,375	+114	+1,489
ii	-169	-60	-67	+116	-38	-285	-503	-46	0	-46
iii	-141	-50	+98	+106	-39	-309	-335	-201	0	-201
iv	-65	+6	-187	+191	-2	-329	-386	-1,013	0	-1,013
1922										
i	+164	+94	+84	-195	-25	+409	+531	+591	+200	+791
ii	-54	-45	+109	+41	-108	-605	-662	-205	0	-205
iii	-88	-43	+155	-59	+19	-140	-156	-22	0	-22
iv	+65	+14	+283	+256	+84	+176	+878	+251	+163	+414
1923										
i	+116	+177	-16	-251	-104	+123	+45	+105	+50	+155
ii	-139	-42	-26	+121	+56	+262	+232	+689	+63	+752
iii	+93	-42	+19	-199	+109	+367	+347	+481	+50	+531
iv	+40	+30	+230	+75	+63	+303	+741	+114	+50	+164

TABLE 32 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1924										
i	+45	+130	+33	-191	-29	-156	-168	-108	-200	-308
ii	-124	-33	-200	-77	+94	+656	+316	+773	-150	+623
iii	+109	-37	-99	-68	-30	+96	-29	+105	-150	-45
iv	+109	-4	+70	+405	+31	-199	+412	-215	-200	-415
1925										
i	+52	+115	+3	-353	0	+445	+262	+322	-50	+272
ii	-159	-45	-170	+116	+23	-152	-387	+70	-60	+10
iii	0	-31	+90	+13	-54	-59	-41	+93	-60	+33
iv	+166	+23	+125	+341	+103	+359	+1,117	+490	-50	+440
1926										
i	+12	+44	-65	+87	+25	+89	+192	+252	+111	+363
ii	+62	-34	-202	-38	+2	-190	-400	+57	+111	+168
iii	+111	-20	+101	-94	-49	-446	-397	-263	0	-263
iv	+53	+14	+310	+136	+182	+46	+741	+114	+111	+225
1927										
i	-6	+48	+93	-481	-32	-200	-578	-518	-10	-528
ii	-81	-47	-305	+27	-55	+56	-405	+52	-10	+42
iii	+175	-8	+6	+52	+47	+83	+355	+489	-10	+479
iv	-22	+24	+207	+323	+75	+21	+628	+1	-10	-9
1928										
i	+220	+15	0	+52	-142	+268	+413	+473	+30	+503
ii	-228	-55	-237	-93	-121	-440	-1,174	-717	+20	-697
iii	+70	-10	+53	-243	+64	-103	-169	-35	+30	-5
iv	+71	+15	+270	+299	+113	+100	+868	+241	+30	+271

^a The quarterly net change derived from Table 31 is here multiplied by an appropriate average price for each quarter.

^b The seasonal adjustment made to column 7 (computed from data for 1921-30) is as follows: +\$60 m., +\$457 m., +\$134 m., -\$627 m.

^c The groups not covered in column 8, and for which no satisfactory quarterly data are available, comprise Paper and printing, Rub-

TABLE 33

MANUFACTURING INVENTORIES: DERIVATION OF NET CHANGE, CURRENT PRICES, 1929-38*

Billions of dollars, except where indexes are shown

Year and Quarter	Manufacturers' Nondurable			Manufacturers' Durable			Total, Net Change, Current Prices
	Inventory, Current Value, ^b 1935-39 = 100	Inventory, 1929 Prices ^c	Net Change, Current Prices ^d	Inventory, Current Value, ^b 1935-39 = 100	Inventory, 1929 Prices ^c	Net Change, Current Prices ^d	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1928							
iv	104.2	7,375	..	103.7	5,909
1929							
i	103.1	7,370	-5	105.6	5,919	+10	+5
ii	102.1	7,397	+27	109.5	6,070	+152	+179
iii	108.0	7,661	+268	111.9	6,259	+189	+457
iv	110.7	8,012	+348	111.5	6,363	+103	+451
1930							
i	118.8	8,982	+908	107.1	6,218	-140	+768
ii	117.4	9,305	+292	107.1	6,546	+307	+599
iii	120.1	10,429	+940	102.8	6,498	-43	+897
iv	104.5	9,879	-417	97.0	6,237	-228	-645
1931							
i	95.9	9,727	-107	94.1	6,141	-82	-189
ii	88.5	9,801	+49	91.9	6,110	-26	+23
iii	89.3	10,444	+403	86.7	5,790	-262	+141
iv	84.6	9,894	-329	81.2	5,496	-236	-565
1932							
i	79.5	9,598	-167	80.2	5,551	+43	-124
ii	74.6	9,571	-14	77.0	5,415	-104	-118
iii	71.1	9,157	-222	70.7	4,983	-329	-551
iv	64.5	8,494	-347	65.2	4,612	-283	-630
1933							
i	63.0	8,931	+209	64.0	4,596	-12	+197
ii	59.7	8,416	-278	64.1	4,575	-16	-294
iii	68.4	7,586	-547	66.8	4,482	-75	-622
iv	79.6	7,862	+185	69.0	4,381	-85	+100
1934							
i	83.4	7,824	-26	72.8	4,485	+90	+64
ii	88.5	8,092	+186	76.2	4,561	+67	+253
iii	88.4	7,884	-151	75.1	4,546	-13	-164
iv	85.9	7,472	-302	73.7	4,483	-54	-356

TABLE 33 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1935							
i	86.6	7,480	+6	76.4	4,594	+95	+10
ii	87.8	7,446	-26	76.1	4,510	-72	-9
iii	86.3	7,215	-176	79.5	4,619	+94	-8
iv	90.6	7,378	+125	83.2	4,757	+119	+24
1936							
i	88.8	7,160	-166	85.4	4,866	+95	-7
ii	90.3	7,286	+95	88.1	5,025	+138	+23
iii	90.9	7,225	-49	92.6	5,254	+200	+15
iv	98.5	7,653	+357	98.6	5,558	+270	+62
1937							
i	104.0	7,385	-244	108.5	5,890	+311	+6
ii	113.0	7,857	+438	122.0	6,197	+299	+73
iii	118.8	8,748	+782	132.5	6,749	+539	+1,32
iv	115.9	9,153	+316	125.3	6,445	-294	+2
1938							
i	112.2	9,228	+56	116.9	6,052	-376	-32
ii	107.5	9,200	-20	108.3	5,639	-395	-41
iii	104.7	8,973	-161	102.1	5,334	-289	-45
iv	103.1	8,918	-38	100.4	5,259	-71	-10

^a Seasonal adjustment has already been made where necessary to all items in this table.

^b National Industrial Conference Board, *Economic Record*, Supplement, Dec. 26, 1940. Estimated due to C. L. Rogers, J. M. Thayer, Jr., and O. Watzik. Data are for the end of the quarter shown but as no data are available for the end of 1928, figures for January 1929 were used for the items in the series.

^c The NICB data (column 1) were deflated by combining unpublished price indexes computed by Moses Abramovitz for textiles, leather, paper, rubber, and chemicals. The value of each group index was chosen to represent cost or market, whichever was lower, assuming a 3-month turnover. The group indexes were then combined, using estimated 1929 year-end inventories in 1929 prices as weights, and column 1 was divided by the result. The index of inventories in 1929 prices so obtained was used to interpolate year-end inventories, similarly deflated, obtained from *Statistics of Income* data and due to Moses Abramovitz. As noted in the text, the NICB data do not cover the food group but the annual data chosen for interpolation include this group as well as the five groups mentioned above. Data are for the end of the quarter shown.

^d The quarterly differences obtained from columns 2 and 5 are here shown after conversion to current prices, the indexes used being the same as those mentioned in notes c and e, combined with the same weighting systems. The mean value for the quarter is used in each case.

^e The NICB data (column 4) were deflated by combining an unpublished price index computed by Moses Abramovitz for lumber, with the BLS indexes for building materials (to cover the stone, clay and glass industry) and metal products. The value of each group index was chosen to represent cost or market, whichever lower, assuming a 3-month turnover. The three group indexes were then combined, using estimated 1929 year-end inventories in 1929 prices as weights, and column 4 divided by the result. The index of inventories in 1929 prices so obtained was used to interpolate year-end inventories, similarly deflated, obtained from *Statistics of Income* data and due to Moses Abramovitz. The annual data for interpolation by this procedure were chosen to include miscellaneous manufacturing, as well as the groups mentioned above. Data are for the end of the quarter shown.

TABLE 34

DISTRIBUTIVE AND MANUFACTURING INVENTORIES:
CONTRIBUTION OF NET CHANGE, CURRENT PRICES, 1921-38^a

In billions of dollars, except column 1

Year and quarter	Department Store Stocks, Current Value, 1923-25 = 100 ^b	Retail Inventories, 1929 Prices ^c	Net Change, Retail Inventories, Current Prices ^d	Net Change, Wholesale Inventories, Current Prices ^e	Net Change, Distributive Inventories, Current Prices (3 + 4)	Net Change, Manufacturing Inventories, Current Prices, (Tables 32 and 33)	Net Change, Total Inventories, Current Prices (5 + 6) ^f
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1920							
iv	96	5,638
1921							
i	85	5,612	-31	+90	+59	+1,489	+1,548
ii	88	6,215	+658	+90	+748	-46	+702
iii	93	6,643	+455	+90	+545	-201	+344
iv	88	6,528	-120	+7	-113	-1,013	-1,126
1922							
i	88	6,680	+152	-21	+131	+791	+922
ii	87	6,584	-97	-21	-118	-205	-323
iii	90	6,308	-301	-21	-322	-22	-344
iv	90	6,308	0	-21	-21	+414	+393
1923							
i	95	6,585	+305	+100	+405	+155	+560
ii	96	6,710	+136	+100	+236	+752	+988
iii	101	7,160	+482	+100	+582	+531	+1,113
iv	99	6,972	-202	+79	-123	+164	+41
1924							
i	102	7,272	+316	-8	+308	-308	0
ii	100	7,426	+157	-8	+149	+623	+772
iii	101	7,419	-7	-10	-17	-45	-62
iv	100	7,163	-270	-10	-280	-415	-695
1925							
i	102	7,265	+108	-10	+98	+272	+370
ii	101	7,221	-46	-14	-60	+10	-50
iii	103	7,267	+49	-14	+35	+33	+68
iv	103	7,126	-155	-14	-169	+440	+271

TABLE 34 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1926							
i	104	7,436	+331	+67	+398	+363	+761
ii	101	7,312	-130	+67	-63	+168	+105
iii	102	7,471	+164	+67	+231	-263	-32
iv	102	7,522	+53	+67	+120	+225	+345
1927							
i	103	7,764	+243	+31	+274	-528	-254
ii	101	7,628	-136	+31	-105	+42	-63
iii	104	7,816	+190	+31	+221	+479	+700
iv	103	7,581	-241	+31	-210	-9	-219
1928							
i	101	7,515	-67	+38	-29	+503	+474
ii	99	7,359	-158	+38	-120	-697	-81
iii	99	7,272	-89	+38	-51	-5	-56
iv	100	7,478	+208	+38	+246	+271	+511
1929							
i	99	7,425	-53	+65	+12	+5	+1
ii	98	7,424	-1	+65	+64	+179	+24
iii	100	7,463	+39	+65	+104	+457	+56
iv	100	7,630	+166	+65	+231	+451	+68
1930							
i	97	7,594	-35	+17	-18	+768	+75
ii	96	7,801	+196	+17	+213	+599	+81
iii	91	7,583	-199	+17	-182	+897	+71
iv	91	7,890	+273	+17	+290	-645	-35
1931							
i	84	7,563	-277	-41	-318	-189	-50
ii	82	7,583	+16	-41	-25	+23	-
iii	81	7,556	-22	-41	-63	+141	+7
iv	78	7,667	+87	-41	+46	-565	-51
1932							
i	70	7,153	-384	-91	-475	-124	-59
ii	67	7,107	-33	-91	-124	-118	-24
iii	60	6,338	-552	-91	-643	-551	-1,19
iv	60	6,466	+91	-91	0	-630	-63
1933							
i	54	6,009	-312	-76	-388	+197	-19
ii	57	6,268	+181	-76	+105	-294	-18
iii	70	7,028	+595	-76	+519	-622	-10
iv	65	6,140	-713	-76	-789	+100	-68

BLE 34 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1934							
i	65	6,004	-111	-76	-187	+64	-123
ii	66	6,141	+113	-76	+37	+253	+290
iii	64	5,861	-231	-23	-254	-164	-418
iv	64	5,818	-36	0	-36	-356	-392
1935							
i	64	5,701	-99	0	-99	+101	+2
i ₁	63	5,592	-93	+50	-43	-98	-141
ii ₁	64	5,647	+47	+50	+97	-82	+15
iv	65	5,682	+30	+69	+99	+244	+343
1936							
i	65	5,790	+92	+118	+210	-71	+139
ii	65	5,838	+40	+120	+160	+233	+393
iii	68	6,028	+162	+120	+282	+151	+433
iv	71	6,250	+192	+118	+310	+627	+937
1937							
i	76	6,404	+139	+100	+239	+67	+306
ii	76	6,376	-25	+75	+50	+737	+787
iii	77	6,533	+141	+25	+166	+1,321	+1,487
iv	72	6,308	-198	0	-198	+22	-176
1938							
i	70	6,303	-4	-36	-40	-320	-360
ii	68	6,204	-82	-36	-118	-415	-533
iii	67	6,121	-69	-36	-105	-450	-555
iv	66	6,081	-33	-36	-69	-109	-178

Seasonal adjustment has already been made where necessary to all items in this table.

Annual Reports of the Board of Governors of the Federal Reserve System.

The ratio between column 1 and year-end retail inventories as derived by Kuznets from invento-sales ratios (*Commodity Flow and Capital Formation*, Table VII-6) is fairly steady, and suggests a conversion ratio of \$7,500 million = 100 for the department store index. Column 1 was therefore taken on this basis (without being adjusted annually for exact agreement with Kuznets' totals) and deflated with the help of a specially constructed price index, as follows:

BLS Indexes	Weight assigned
Perishable	
All foods	225
Drugs and pharmaceuticals	3
Paper and pulp	17
Semidurable	
Boots and shoes	1
All textiles	4
Automobile tires	1
Durable	
Automobiles	1
Housefurnishing goods	1

The weights are those used by the BLS and are based on sales in 1926 (see *BLS Bulletin* 493). It is notoriously unsafe to rely on sales data as a means of judging the composition of inventories when inventory changes. Nevertheless, within the durability classes, we have no other device for

Footnotes to Table 34 continued on next page.

TABLE 35

NET CHANGE IN INVENTORIES, ALL GROUPS, ANNUALLY 1921-38

Millions of current dollars

Year and Quarter	Manufacturing and Distribution		Agri- culture ^b	All Other ^b	Total, All Groups, (1 + 3 + 4)
	As Pre- sented Here ^a	As Given by Kuznets ^b			
	(1)	(2)	(3)	(4)	(5)
1921	+1,468	(+295)	-514	+273	+1,227
1922	+648	(+1,150)	-47	-569	+32
1923	+2,702	(+2,592)	+15	+409	+3,126
1924	+15	(-435)	-695	+213	-467
1925	+659	(+816)	+713	+259	+1,631
1926	+1,179	(+1,352)	-315	+549	+1,413
1927	+164	(-180)	+73	+571	+808
1928	+118	(+455)	+139	-915	-658
1929	+1,503	(+1,626)	-70	+858	+2,291
1930	+1,922	(+82)	-146	-1,064	+712
1931	-950	(-1,409)	+280	-246	-916
1932	-2,665	(-2,415)	+125	-171	-2,711
1933	-1,172	(-865)	-255	-9	-1,436
1934	-643	(-1,103) ^c	-683	+103 ^d	-1,223
1935	+219	(-27) ^c	+684	+248 ^d	+1,151
1936	+1,902	(+2,413) ^c	-565	+479 ^d	+1,816
1937	+2,404	(+1,595) ^c	+946	-212 ^d	+3,138
1938	-1,626	(-1,094) ^c	+227	+315 ^d	-1,084

^a Table 34, column 7.^b For 1921-33, Simon Kuznets, *Commodity Flow and Capital Formation*, Table VII-10. For 1934-38, unpublished worksheets supporting *Bulletin 74* (National Bureau of Economic Research, June 1939).^c Including also Transportation, Mining, Finance and Miscellaneous.^d Construction only.

weighting our price index. As between classes we can do better than this, for we know that retail inventories were distributed about equally among the perishable, semidurable and durable groups. (Kuznets, *Commodity Flow and Capital Formation*, Table VII-6). The three group indexes, cost or market being chosen for each, were therefore combined with equal weights. Average turnover was assumed to be two months for perishable and three months for semidurable and durable commodities.

^d The net change obtained from column 2 was revalued in current prices using the index developed in note c, mean of each quarter.

^e Of somewhat less importance than retail inventories, wholesale inventories lack any interpolating medium, however unsatisfactory. As suggested in §2, it appeared unwarranted to generalize some other series, for example department store stocks, to cover this field. An arbitrary distribution of the net annual change in current prices (*Commodity Flow and Capital Formation*, Table VII-10, supporting worksheets) was therefore made.

^f As noted in §2, this series covers only Manufacturing and Distribution, which together accounted for about three quarters of all inventories in 1929 (*Ibid.*, Table VII-6). No figures are presented here for other groups; of these Agriculture is the most important, accounting for about half the remainder.

TABLE 36

INVENTORY PROFITS, AND RESIDUAL INCOME AFTER THEIR REMOVAL, MANUFACTURING, SEASONALLY ADJUSTED, QUARTERLY 1921-38

Millions of current dollars

<i>Year and Quarter</i>	<i>Residual Income, Unadjusted for Inventory Profits (Table 12)</i>	<i>Inventory Profits^a</i>	<i>Residual Income, Adjusted to Exclude Inventory Profits</i>
	(1)	(2)	(3)
1921			
i	41	-1,659	1,700
ii	-73	-527	454
iii	-58	-548	490
iv	-1	-55	54
1922			
i	269	-297	566
ii	607	76	531
iii	766	254	512
iv	1,062	318	744
1923			
i	1,094	249	845
ii	1,154	152	1,002
iii	874	-226	1,100
iv	690	-2	692
1924			
i	927	-234	1,161
ii	622	-367	989
iii	585	33	552
iv	794	298	496
1925			
i	908	221	687
ii	936	-111	1,047
iii	934	147	787
iv	958	70	888
1926			
i	939	-525	1,464
ii	903	-218	1,121
iii	939	-68	1,007
iv	877	-140	1,017

TABLE 36 (continued)

	(1)	(2)	(3)
1927			
i	866	-292	1,158
ii	744	-68	812
iii	774	-22	796
iv	747	138	609
1928			
i	796	-147	943
ii	875	4	871
iii	1,050	40	1,010
iv	1,126	-65	1,191
1929			
i	1,049	-102	1,151
ii	1,167	-156	1,323
iii	1,203	-39	1,242
iv	965	-420	1,385
1930			
i	646	-608	1,254
ii	444	-833	1,277
iii	67	-959	1,026
iv	-92	-697	605
1931			
i	-55	-535	480
ii	-158	-656	498
iii	-246	-403	157
iv	-384	-69	-315
1932			
i	-383	-288	-95
ii	-468	-400	-68
iii	-510	-39	-471
iv	-484	-117	-367
1933			
i	-436	-379	-57
ii	-109	64	-173
iii	421	1,314	-893
iv	380	727	-347
1934			
i	364	303	61
ii	363	177	186
iii	145	26	119
iv	191	42	149

TABLE 36 (continued)

	(1)	(2)	(3)
1935			
i	357	-2	359
ii	363	73	290
iii	428	86	342
iv	619	115	504
1936			
i	564	47	517
ii	684	-35	719
iii	792	80	712
iv	898	94	804
1937			
i	894	713	181
ii	842	421	421
iii	743	-467	1,210
iv	453	-543	996
1938			
i	233	-306	539
ii	195	-282	477
iii	318	-17	335
iv	517	-69	586

^a The data in column 2 were obtained as follows. For 1921-28 the constant dollar inventories in Table 31 were reflated as indicated below:

<i>Group in Table 31</i>	<i>BLS Index Used</i>
Food and beverages } Tobacco	Food products
Chemicals	Chemicals and drugs
Textiles and leather	Hides and leather, 1; textiles, 5
Lumber, stone, clay and glass	Building materials
Metal products	Metal Products

From the change in the current value inventories so obtained for these groups, the net change in current prices shown in column 8 of Table 32 was subtracted, yielding the required inventory profit for the groups shown separately in these tables. For the remaining manufacturing groups (Paper and printing, Rubber and Miscellaneous), for which no quarterly data are available for this period, mean annual inventories in 1929 prices were assumed to be equal to the mean of the year-end inventories. Unpublished data due to Moses Abramovitz, consisting of a revision of the figures used in *Commodity Flow and Capital Formation*, were employed for this purpose. The mean annual inventories for the three groups were multiplied by the quarterly price change disclosed by the following BLS indexes:

<i>Group</i>	<i>BLS Index Used</i>
Paper and printing	Paper and pulp
Rubber	Crude rubber
Miscellaneous manufacturing	All commodities

In all cases the lower-of-cost-or-market calculation was used in making the valuations, a three-month turnover being assumed.

For 1929-38 the year-end inventories for Manufacturing, current valuation, in Table VII-6 of *Commodity Flow and Capital Formation*, together with an extension of the same data by Moses Abramovitz, were segregated into durable and nondurable groups, and interpolated with the two NICB indexes already referred to. (See note b to Table 33.) From the differences obtained, the net change in current prices, shown in column 7 of Table 33, was subtracted, yielding the inventory profit.

TABLE 37
INVENTORY PROFITS, AND RESIDUAL INCOME AFTER THEIR REMOVAL, ALL GROUPS, ANNUALLY 1919-38

Except for Column 1, inserted for purposes of comparison, all data are taken directly from Simon Kuznets, *National Income and Its Composition*

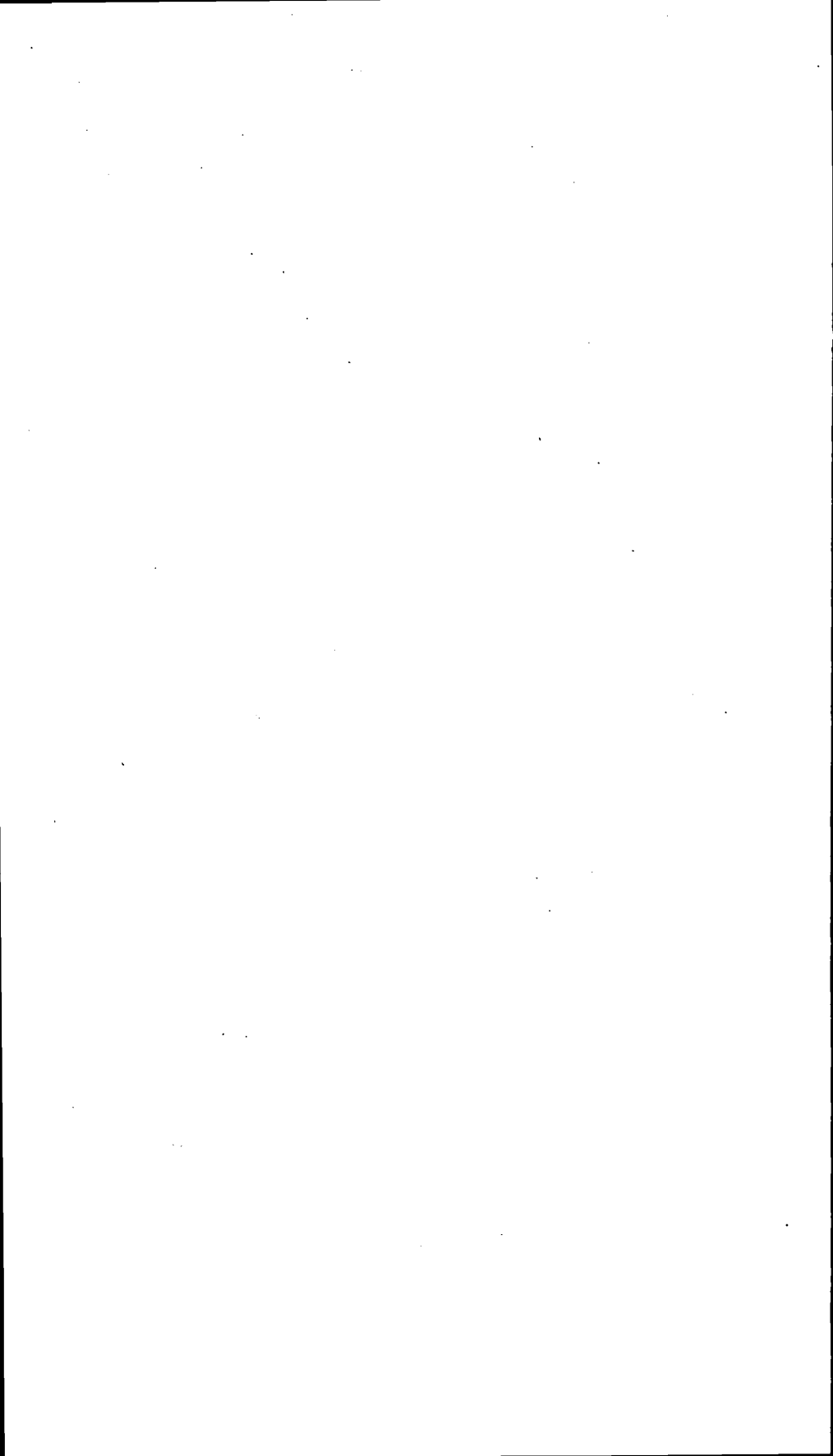
Millions of current dollars

Year	Inventory Profits ^a			Residual Income Adjusted to Exclude Inventory Profits ^b			Total (6 to 8)		
	Manufacturing As Presented As Given by in Table 36	Distribution	All Other	Total (2 to 4)	Manu- facturing	Distribution		All Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1919	..	902	906	142	1,950	3,626	4,742	2,290	10,658
1920	..	-2,100	-1,974	97	-3,977	5,085	5,378	2,174	12,637
1921	-2,789	-2,813	-2,739	-818	-6,370	2,598	4,316	1,822	8,736
1922	351	372	334	171	877	2,497	2,908	1,913	7,318
1923	173	129	11	16	156	3,645	3,732	2,494	9,871
1924	-270	-176	73	-54	-157	3,053	3,252	2,810	9,115
1925	327	51	315	-16	350	3,715	3,150	3,843	10,708
1926	-951	-782	-858	-55	-1,695	4,449	4,067	3,850	12,366
1927	-244	-383	-178	-223	-784	3,497	3,247	3,759	10,503
1928	-168	25	-137	52	-60	3,876	3,413	4,288	11,577
1929	-717	-362	-326	-14	-702	4,746	3,364	4,655	12,765
1930	-3,097	-2,098	-1,696	-321	-4,115	3,163	3,208	2,182	8,553
1931	-1,663	-1,517	-1,430	-283	-3,230	674	2,129	-229	2,574

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1932	-844	-633	-742	-96	-1,471	-1,212	999	-1,891	-2,104
1933	1,726	1,111	1,013	149	2,273	-865	554	-1,643	-1,954
1934	548	993	309	185	1,487	28	1,709	-275	1,462
1935	272	401	314	9	724	1,366	1,873	850	4,089
1936	186	83	52	29	164	2,877	2,633	1,951	7,461
1937	124	306	184	145	635	2,584	2,491	1,973	7,048
1938	-674	-625	-424	-55	-1,104	1,923	2,998	1,592	6,513

^a The figures in columns 2 through 5 represent an extension and breakdown (with sign reversed) of the corresponding adjustments distinguished in Table 4. The data are derived from Kuznets, *National Income and Its Composition*, Table VII.

^b Data for residual income before adjustment were derived from Kuznets, *op. cit.*, Part Four; for all years except 1919 and 1920 they are reproduced in Table 38 below. In effecting the adjustment, the inventory profits shown in columns 2 through 5 are deducted.



Appendix D

BASIC INCOME DATA
AND SUBSIDIARY BREAKDOWNS