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Appendix B

QUARTERLY NET INCOME OF CORPORATIONS

§1. *Introduction*

The material in this appendix provides an analysis of the sample data on quarterly net incomes of corporations underlying the interpolation of residual income in Chapter V. It represents an attempt to measure short term fluctuations in the return to corporate enterprise in the United States over as large a field as possible during the period 1921–38. The figures shown in Tables 26, 27 and 28 are estimates of the aggregate dollar volume of profits earned, after interest payments and taxes but before dividends, quarter by quarter, in each of the industrial groups and subgroups shown. The industrial classification adopted is derived from the *Statistics of Income*, and is described in detail in Appendix E. Tables 26 and 27 and Charts VI and VII exhibit the material, for those groups interpolated by discontinuous sample (see below), in the form of overlapping annual segments. Continuous data for all groups which can be interpolated will be found in Table 28 and Chart VIII. The income data in this appendix have not been related in any way to the capitalization of the corporations in question. Over short periods, or from quarter to quarter, the fluctuation in percentage yield on capital would doubtless resemble closely the movement shown by the dollar volume of profits.

The basic material for this study consists of the quarterly (occasionally half-yearly) income accounts of individual corporations, as published in the *Commercial and Financial Chronicle* and in *Moody's Investors' Service*. Thanks to the courtesy extended to me by D. R. Young of the statistical department of the National City Bank of New York I was enabled to make use of the transcription of these profits in his files. In all doubtful cases, however, or where more information was required, and for years not covered by Mr. Young's file, reference has been made to the original income statements as published in the *Commercial and Financial Chronicle* or in *Moody's Investors' Service*. This sample, of between 700 and 800 corporations, of which about half are in Manufacturing,[1] represents less than 1 percent

[1] For the distribution of these corporations among different industrial groups, see Table 23.

of all industrial corporations in the United States, but includes perhaps 10 percent of all corporate earnings: less in earlier years, considerably more in later years in particular industrial groups. It will be referred to as the "available sample."

§2. *Industrial Coverage*

The industrial coverage of the sample, and the manner in which it has been used in the present study, are outlined in the following notes. The whole field of enterprise falls into three categories: I, in which high coverage can be secured during the entire period by means of one or more samples of constant composition in each group; II, in which data exist for the whole, or a major part, of the period, but the coverage varies from year to year; III, in which data are inadequate or absent.

I. Coverage is high throughout the period, permitting treatment by continuous sample, for the following industrial groups:

C. Public Utilities
F. Steam Railroads
H. Communication

For the first of these the sample of net profits of identical corporations collected by the Federal Reserve Bank of New York and published in the *Survey of Current Business* was used for years after 1928,[2] and for earlier years Bureau of the Census data on net operating income were employed. For Steam Railroads and Communication, series published by the Interstate Commerce Commission and the Federal Communications Commission, respectively, are available. The sample data in Groups F and H as published refer to net income before interest charges; there was, however, no difficulty in removing interest payments quarter by quarter, in order to obtain series which conform to the statutory definition (pre-1936) of net income as used in other groups. It so happens that the three groups in this category are entirely incorporated. In principle, therefore, it makes no difference whether we use the sample data to interpolate *Statistics of Income* totals for statutory net income after taxes, or whether we derive the residual income, discussed in Chapter V, directly. It is more convenient to adopt the latter procedure, and consequently the final estimates for the profits of all corporations shown in Table 28 for

[2] I have to thank John Helf of the research department of the Federal Reserve Bank of New York for his kindness in supplying me with additional material in this connection.

these groups refer to residual income rather than to the statutory net income after taxes of the *Statistics of Income*.

II. This category contains the following groups for which coverage is variable and the treatment is by discontinuous sample:

B. Mining
D. Manufacturing
E. Construction
G.1. Water transportation
K.1. Laundries, hotels and restaurants
K.2. Amusements
M. Miscellaneous

The last five groups are conveniently classed together as Other Nonmanufacturing, and are so described in Tables 26–28. The basic data for these groups appear in Table 26, and are summarized (after certain adjustments detailed below) in Tables 27 and 28. The figures in Tables 26 and 27, and the final estimates for these groups in Table 28, conform to the levels for statutory net income after taxes (as defined in 1935 and prior years) for all corporations in the groups and subgroups indicated.[3]

III. Data are inadequate or absent for the following groups; quarterly corporate income statements exist, but cannot be used.

I.2. Retail distribution
K.3. Business services

In retail distribution adequate segregation of annual data from similar data for wholesale distribution cannot be carried out, and, as there are no quarterly data in the latter, it is impossible to use the data available in the former group. In business services quarterly statements are available for a single corporation only. The following groups are entirely unrepresented in the sample of quarterly reports, and their interpolation cannot therefore be attempted by the methods set forth in this appendix:

A. Agriculture (corporations are of course unimportant here)
I.1. Wholesale distribution
F. Finance
K.4. Professional services (corporations are unimportant in this group also)

[3] However, the "continuity adjustment" used in the transition from Table 27 to Table 28 leads to slight discrepancies between the data in the latter table and the totals printed in the *Statistics of Income*. See further discussion below, §17.

Clearly these groups, especially Distribution and Finance, represent a serious gap in the data. As pointed out in Chapter V, §1, the existence of this gap complicates immensely the task of estimating residual income quarterly for the economy as a whole.

§3. *Scope of Appendix B*

To the industrial groups in category III, for which no useful quarterly income data exist, no further reference will be made. With regard to category I—Public Utilities, Steam Railroads and Communication—the sample data collected by the various agencies mentioned have a high coverage, and are used directly for the interpolation of residual income. Apart from the correction for interest payments already noted, this part of the work presents no special problems. The results appear in Table 28 below, and are carried directly to Table 12 in Chapter V of the text proper.

The remaining, and by far the most complicated and laborious, business relates to the second category distinguished above—including especially Mining and Manufacturing—wherein bias and deficiencies of coverage preclude use of the sample data as they stand, although these data can be made to yield valuable information. The remainder of this appendix is therefore devoted to a discussion of the value of the sample available in these industrial groups, and to a description of the methods used in passing from the original corporate data to assumed quarterly totals for all corporations in the groups concerned. Preliminary data for these groups—listed in category II above—appear in Tables 26 and 27 (Charts VI and VII), and final estimates in Table 28 (Chart VIII).

The estimates for residual income in this part of the field, shown in Table 12 of Chapter V, are derived directly from Table 26 by adjustment in each minor group for the earnings of unincorporated enterprises, and subsequent adjustment of the major group totals for amplitude and continuity, along lines discussed below (§§13–17). The data in Table 28, however, have an interest which is different from that of the more comprehensive totals for residual income as a whole presented in Chapter V. The estimates in Table 12 of that chapter cover unincorporated enterprises as well as corporations, and industrial groups in which satisfactory interpolating media are unobtainable, in addition to those handled by the sample data of this appendix. Such global estimates are indispensible for the derivation of quarterly totals for the whole national income, but inevitably they reach a much lower order of precision than do the data in Table 28

below. The estimates in Table 28, which are restricted to corporations and to certain industrial groups, perhaps make up in precision what they lose in generality. Regarded as a measure of the earnings of enterprise as a whole, they represent the broadest coverage at present attainable. As an index for measuring profits in general, the totals of Table 28 (series "X") are certainly superior to the totals for residual income in Tables 12 and 18 of the main text.

§4. *Alternative Procedures*

We pass now to a discussion of the sample data available in Mining, Manufacturing and other groups shown in Table 26. The choice between the interpolation and index number methods of procedure, a choice discussed at some length in Chapter I, §3, is particularly difficult to make in this field. It would undoubtedly have been possible, with the help of the material at hand, directly to construct an index, based on one or more groups of identical corporations,[4] which would show quarterly fluctuations in profits. To this end the net incomes of all corporations as reported annually in the *Statistics of Income* might have been used to weight roughly the samples appropriate to various industrial divisions. Such a procedure would, however, have had a number of important disadvantages, and consideration of these led to its rejection. In the first place, as just indicated, the available sample is biased in favor of large corporations. There is some evidence that the profits of large corporations fluctuate less than those of small corporations during the course of the cycle,[5] and such an index would therefore understate the cyclical swings in profits.

Nor, in the second place, could a secular bias be ruled out. For example, such a group as our D.1 (b) Beverages would be badly underrepresented, as this method could take no account of the sharp increase in the size and importance of the group which occurred in 1934 upon the repeal of Prohibition.

In the third place the available sample is known to have a more favorable experience than the population, possibly because corpora-

[4] I.e., using a sample of constant composition in each industrial group.

[5] A comparison of R. C. Epstein's data for the profits of 2,046 large manufacturing corporations during 1919–28 (*Industrial Profits in the United States*, National Bureau of Economic Research, 1934) with similar data for all manufacturing corporations as reported in the *Statistics of Income* suggests that this is the case. A comparison of the annual totals of quarterly profits for 168 large industrial corporations (all of which are included in our own sample) as compiled by the Federal Reserve Bank of New York since 1928 (*Survey of Current Business*) with similar data for all corporations in Manufacturing and Mining (*Statistics of Income*) leads to the same conclusion.

tions are more chary about reporting losses than about reporting profits.[6] It is not known, however, whether the experience of the sample is uniformly biased in this respect to the same degree throughout the period; in using an identical sample it would be necessary to assume a bias distributed evenly through time.

Fourth, between one industrial subdivision and another profits probably fluctuate more widely than any other accounting item. But unless a chain index is used the index number method involves a uniform system of weighting. With material in which there are such wide fluctuations in the relative importance of different groups, a uniform system of weighting would be particularly unsatisfactory.

Finally, in a period as long as eighteen years the requirements of an identical sample would severely restrict the fraction of the available sample which could be used in any year, for corporations not only come into existence, merge, or are liquidated; they may also publish quarterly reports for a few years, and then cease to do so. This difficulty could have been surmounted in part by subdivision of the period and the use in each group of a number of identical samples linked together—in fact an approach to the chain method. Again the work would have been much increased, and not all of the information available would have been used.[7]

The alternative procedure is to start with the figures for corporate net income or profits as reported in the *Statistics of Income* and to use the available sample of published quarterly income statements year by year to distribute these annual data among quarters. The main disadvantage of this method is that, if use is made of an industrial classification which is at all detailed, it is extremely difficult to allow for possible changes from one year to another in the classification adopted by the Bureau of Internal Revenue. This difficulty diminishes as we proceed from narrower to broader industrial groups by summation. Another difficulty is that changes in tax laws affect the continuity of the income data reported in the *Statistics of Income*, both as regards industrial classification (the abolition in 1934 of the privilege of filing consolidated returns) and as regards the definition of net income itself (the inclusion in 1936 and later years of dividends received). Also the calendar year data are distorted by the presence of fiscal year returns. Finally income reported for tax purposes is not

[6] The method by which this particular bias is overcome is discussed below.

[7] However, the overlapping data of Tables 26 and 27, computed to test the continuity of the series, constitute an approach to the chain method. See §14 below.

always the same as income reported to stockholders. Some only of these difficulties can be overcome.

In spite of these obstacles, the possibility of making greater use of the available sample of published quarterly statements, and the opportunity to correct for bias in the material, led to the decision to use the second procedure which has just been outlined. That is to say, as in the case of other components of the national product dealt with in the present volume, in reducing annual to quarterly figures the interpolation rather than the index number method was chosen. In Chapter I, §3, where the problem was discussed in general terms, a compromise solution was suggested—the graduation of raising factors. This compromise has been applied extensively in the interpolation of the other components, such as consumption, investment and short and long term income. In this part of the study, upon which the calculation of residual income in Chapter V is based, no such compromise solution was possible in the absence of treatment with identical samples. Therefore in the following pages it has been necessary to resort to direct year-by-year interpolation, supplemented by the extrapolation of overlapping values at year ends. It is indeed doubtful whether, even with the help of identical samples, much use could be made of the compromise mentioned. For, as we shall see in a later paragraph, the notion of a raising factor has only the most limited application in this field.

§5. *Industrial Classification*

For the most part, therefore, interpolation to quarters was conducted independently in each year and in each industrial subdivision. The corporations were classified on the basis of the type of business reported in *Moody's Industrials*, with the help of the instructions for coding used by the staff of the income tax unit of the Bureau of Internal Revenue for 1934. It is possible—one might say certain—that individual corporations are not always reported in the same subgroup of the *Statistics of Income* classification from year to year. Nevertheless, the corporations in the available sample were distributed among the same industrial divisions in all years in the period; no other procedure seemed feasible. In order to take partial account of this complication, five corporations which seemed particularly difficult to classify were placed both in B.3. Oil and gas and in D.6 (c) Petroleum refining, and one such corporation was placed both in B.2. Coal mining and in D.5 (a) Iron and steel. These six corporations have

double weight in the final result, but this is an insignificant matter as far as the totals are concerned. On the other hand the individual figures for the four subdivisions mentioned are probably improved by this treatment. The classification used is given in some detail in Appendix E.

§6. *Definition of "Net Income"*

Some further difficulties of an accounting nature remain to be discussed. For example, "net income after taxes" does not always have the same meaning in the published income statement of a corporation as it does to the Bureau of Internal Revenue. Thus up to and including 1935 *statutory* net income excluded dividends received on the stock of domestic corporations and interest on tax-exempt obligations,[8] whereas the "net income" or "net profits" reported by corporations in our sample generally include these items. This divergence may falsify the variation from quarter to quarter directly, and do so also indirectly by placing corporations with a statutory deficit among those with positive net income. Although the point does not seem to be especially important, two precautions were taken. Holding companies were excluded from the sample altogether unless they published consolidated income statements; and in several cases, for example du Pont (investment in General Motors) and General Electric, "other income" earned by the company was deliberately excluded quarter by quarter. Otherwise the general principle was to treat as the "net income" of the corporation the last item in the income statement before the distribution of dividends.

Apart from such obvious differences of definition as those just discussed, there is still some doubt how far income for tax purposes coincides with published income in the case of individual corporations. Figures given some time ago by Ebersole, Burr and Peterson suggest that the former commonly falls short of the latter.[9] Individual

[8] Since 1936 the previous definition has been modified. Statutory net income now includes dividends from domestic corporations and interest on government obligations subject to excess-profits tax, while the deduction of contributions is allowed. Of these items the first alone is quantitatively important. However, we have used in every case an adjusted statutory net income in 1936 and later years, deducting the first two items and adding back the third, to secure comparability with years prior to 1936. In this connection I have to thank Edward White of the Bureau of Internal Revenue for supplying me with unpublished breakdowns of the data for 1936–38.

[9] J. F. Ebersole, S. S. Burr and G. M. Peterson, "Income Forecasting," *Review of Economic Statistics* (November 1929), pp. 171 ff. Incidentally, the authors had a poor opinion of the value of the sample of quarterly income statements available at the time they wrote. Apparently, however, they made no effort to weight the sample appro-

cases of lack of coincidence between the two are easy enough to establish.[10] Insofar as these anomalies do not arise from differences of definition already discussed, they must be due to varying treatment of income items (e.g. depreciation) or to a different segregation between income and surplus accounts. We have in any case to use the Bureau of Internal Revenue figures, for they are the only global estimates available.[11] The anomalies in question affect the reliability of the quarterly data presented here mainly to the extent that the aggregate discrepancy (whatever its size and sign) may vary from one year to another.

§7. *Year-End Adjustments*

Where a corporation publishes explicitly each year four separate statements of quarterly income, we must naturally assume that (apart from the question of seasonal variation) these are comparable. At least the corporation executives have implied that they consider them to be so. Unfortunately, corporations publishing regular statements explicitly for all four quarters are in a small minority. In most cases the income for the last quarter has to be obtained by subtracting the income for nine months from the income for the year. As a rule corporations appear to make proper provision for depreciation and depletion, taxes, inventory revaluations, exchange losses and other current items quarter by quarter. In some cases, however, particularly in the early years of the period and especially among mining and oil companies, they have failed to do so. By comparing the quarterly with the annual statements it is nearly always possible to make allowance for this defect. A great deal of time was spent in insuring that as far as possible the figures for the last quarter were comparable with those for the other three. Of course if (say) depreciation were regularly provided from the last quarter's profits, no provision being made for it in the other three quarters, this error would be taken care of at least in part through the seasonal adjustment. It happens, however, that accounting practices have some tendency to improve, and

priately, or to adjust it for bias in other respects. The coverage of the sample has of course increased considerably since 1929.

[10] For example, when a corporation pays a tax on undistributed profits under the Revenue Act of 1936, but nevertheless distributes more than its published earnings. (Howard E. Cooper, "A Study of Individual Corporate Experience with the Undistributed Profits Tax," *Annalist*, Dec. 31, 1937.) In such a case of course income for tax purposes must exceed published income.

[11] The understatement which results from the fact that these figures are derived from unaudited reports is discussed in §19 below.

in fact few companies have continued to sin to the same degree. By the end of the twenties most of them had come to make proper provision for all regular cost items quarter by quarter.

A more acute form of the same difficulty—lack of comparability between the fourth and the other quarters—arises through the practice of some corporations of debiting all kinds of exceptional losses, writedowns, and so forth to income rather than to surplus account at the end of the year. Frequently such items do not really relate to the operations of the year in question at all, still less to those of a single quarter of that year. They may or may not represent deductions allowed for tax purposes at one time or another during the history of the company.

It is not always possible to tell when this disturbance to the figures is present. The difficulty becomes most acute in 1930, 1931 and 1932, when values were falling all around, and there was apparently a tendency to write off everything which could be written off. A great deal of time was spent in tracking down and removing distortions of this kind. They may indeed represent deductions from net income for tax purposes, but not in the quarter in which they are found. Seasonal analysis especially brought a number of these cases to light. Where the fourth quarter figure seemed exceptionally low, and lack of comparability was suspected but could not be confirmed, the corporation was dropped for the year in question. Quite possibly the figures could be still further improved if, for example, quarterly and annual reports were every year compared in detail systematically, irrespective of whether some figure did or did not arouse suspicion. While it is believed that enough care has been taken to secure comparability to prevent much change in the results through the investment of further labor in this direction, a margin of doubt remains. In Manufacturing, for instance, in both 1931 and 1932 the first quarter is higher than the last quarter of the preceding year (Chart VIII). The exceptional depressions of the last quarters of 1930 and 1931 may be due to the effect of year-end adjustments which have not been eliminated, but we have no means of checking this possibility.

§8. *Fiscal Year Other Than Calendar Year*

Some corporations have fiscal years which do not end on December 31st. Of course if there were no tendency for calendar and fiscal years to coincide, the difficulty mentioned in the preceding paragraph would be minimized. The companies whose fiscal years differ from calendar years are, however, in a small minority. Where the fiscal

year coincided with the end of the quarter, no special difficulty arose. Where, however, a fiscal quarter ended in February, two thirds of the quarter in question, and one third of the following quarter, were taken to represent the figure for the first calendar quarter. Where a fiscal quarter ended in January, the fractions adopted were one third and two thirds respectively.

§9. *Representativeness of the Sample*

The adequacy of the sample is extremely hard to judge. Its coverage is much greater in some industrial groups and subgroups than in others, and in recent than in earlier years. The information in the first two tables in this appendix may afford some help to the reader who would judge its value. Table 23 shows the distribution of the corporations in the sample by industrial divisions. It will be observed that our sample contains no corporations engaged in Agriculture (by definition no residual income arises in this group). Minor group G.2. Pipe lines and groups I. Distribution and F. Finance are also absentees, while the sample has no representation in the business and professional service subgroups (K.3 and K.4).[12] In some of the earlier years several of the groups and subgroups shown in Table 23 remain without representation.

Table 23, showing the distribution of the corporations concerned, does not tell us very much. A table showing the actual coverage of net income would tell us even less, because the sample is admittedly biased, and yields in any year far higher coverage of corporations with net incomes than of corporations with deficits. Consequently, a comparison of net income in the sample with net income for the industrial group in question, as reported in the *Statistics of Income*, fails to afford a satisfactory measure of coverage. In fact the comparison is meaningless, for net income accruing in the sample may easily exceed the net income reported for the population from which the sample is supposed to be drawn.

The best alternative seemed to be to assemble data on the coverage of assets, in the sample as compared with *Statistics of Income* totals, and this is done for selected years in Table 24. It will be seen that coverage is poor in the earlier years of the period, except in the isolated case of metal manufacture (i.e. the steel and automobile industries). By 1929 the sample covered, in Mining and in Manufacturing, about one quarter of the entire field, but coverage of the Construction and Service groups remained inadequate throughout.

[12] Cf. §2 above.

TABLE 23

QUARTERLY NET INCOME OF CORPORATIONS:
DISTRIBUTION OF SAMPLE, ALL GROUPS INTERPOLATED, BY NUMBER OF CORPORATIONS

Industrial Group	*1920*	*1921*	*1922*	*1923*	*1924*	*1925*	*1*
Group B. Mining							
B.1 Metal mining	7	7	8	10	10	12	
2 Coal mining	2	2	3	3	4	4	
3 Oil and gas	5	10	11	14	17	18	
4 Other minerals	2	4	4	5	6	6	
Total, group B	16	23	26	32	37	40	
Group D. Manufacturing							
D.1 (a) Food	2	2	4	10	11	15	
(b) Beverages		1	2	3	3	5	
(c) Tobacco			3	3	3	4	
D.2 (a) to (g) Textiles							
(h) Leather, boots and shoes							
(i) Leather, other products	3	3	3	3	3	3	
D.3 (a) Lumber, sawmill and planingmill products						1	
(b) Lumber, other			1	2	2	1	
(c) Stone, clay and glass products	3	3	3	3	3	4	
D.4 (a) Paper and pulp							
(b) Printing and publishing							
D.5 (a) Iron and steel	3	5	6	9	9	9	
(b) Locomotives and railroad equipment	1	1	2	3	4	5	
(c) Automobiles and parts	3	4	9	9	9	18	
(d) Factory machinery				1	1	1	
(e) Agricultural machinery							
(f) Electrical machinery	1	1	2	3	4	4	
(g) Miscellaneous machinery			2	2	2	4	
(h) Household equipment					1	2	
(i) Office equipment			3	3	4	5	
(j) Metal building material and equipment						1	
(k) Hardware and tools	1	1	2	7	9	10	
(l) Precious metals and jewelry							
(m) Nonferrous metals	1	3	4	5	5	3	

1927	*1928*	*1929*	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*	*1936*	*1937*	*1938*
14	15	16	17	15	14	13	14	14	15	11	10
5	7	8	8	9	10	11	11	11	11	11	10
20	18	21	20	21	25	29	29	28	27	27	25
6	6	7	7	6	7	7	8	9	8	8	8
45	46	52	52	51	56	60	62	62	61	57	53
21	22	27	33	33	32	32	32	30	30	23	23
5	5	5	6	6	5	5	13	14	14	8	8
4	7	8	9	9	9	9	9	9	8	7	7
9	25	31	34	33	31	31	33	34	32	28	28
1	4	4	4	4	5	5	5	5	5	5	5
4	5	5	4	4	4	3	3	3	3	3	3
1	2	2	3	3	3	3	2	2	3	3	3
2	3	3	4	5	5	5	5	5	5	5	5
7	9	12	12	13	13	13	14	12	12	10	10
5	5	8	9	11	11	12	11	11	11	11	10
3	5	7	7	9	8	8	9	8	8	6	6
12	12	12	12	12	12	12	12	12	12	12	12
7	9	11	11	11	11	12	12	12	10	10	10
18	18	31	31	31	31	31	31	31	31	31	31
2	3	3	4	5	6	7	7	7	7	5	5
1	1	1	1	1	1	1	1	1	1	1	1
7	10	12	12	12	12	13	13	11	11	11	11
4	9	11	13	14	14	14	14	15	15	15	15
5	5	6	9	9	9	9	8	9	9	9	9
4	5	7	8	8	8	9	9	8	8	8	8
2	3	4	5	4	4	5	5	4	4	4	4
10	13	15	16	16	17	17	17	17	17	17	17
1	1	1	2	2	2	2	2	2	2	2	2
5	7	8	11	11	11	12	12	13	13	13	13

TABLE 23 (continued)

Industrial Group	*1920*	*1921*	*1922*	*1923*	*1924*	*1925*	*1*
D.6 (a) Chemicals	2	2	3	4	4	5	
(b) Drugs	1	1	1	1	1	6	
(c) Petroleum refining	3	4	5	6	7	9	
D.7 (a) Rubber							
(b) (i) Radios						1	
(ii) Miscellaneous manufacturing					1	1	
(iii) Aircraft				1	1	1	
Total, group D	24	31	55	78	87	118	1
Subtract duplications: B.1 and D.5(a)	1	1	1	1	1	1	
B.3 and D.6(c)	1	2	3	3	4	4	
Total, groups B and D, excluding duplications	38	51	77	106	119	153	1
E. Construction		1	1	2	3	4	
G.1 Water transportation			3	3	4	5	
K.1 Laundries, hotels and restaurants			1	2	2	4	
K.2 Amusements						3	
M.1 Miscellaneous, minor transportation				1	1	2	
TOTAL, GROUPS INTERPOLATED BY DISCONTINUOUS SAMPLE	38	52	82	114	129	171	1
C. Public Utilities[a]	95	95	95	95	95	95	
F. Steam Railroads[b]	169	169	169	169	169	169	1
H. Communication[b]	100	100	100	100	100	100	1
TOTAL, GROUPS INTERPOLATED BY CONTINUOUS SAMPLE	364	364	364	364	364	364	3
GRAND TOTAL, ALL GROUPS INTERPOLATED	402	416	446	478	493	535	5

[a] Change in number due to change in size of sample.

1927	*1928*	*1929*	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*	*1936*	*1937*	*1938*
5	9	10	11	11	11	14	14	14	14	14	14
9	13	19	21	22	22	25	27	26	25	24	23
12	11	12	12	11	10	10	10	9	8	8	8
4	6	7	8	8	8	8	8	8	8	8	8
1	1	2	3	3	3	3	3	3	3	3	3
1		2	2	3	5	5	5	5	5	5	5
1		2	5	5	5	6	6	8	8	8	8
173	228	288	322	329	328	341	352	348	342	317	315
1	1	1	1	1	1	1	1	1	1	1	1
5	5	5	5	5	5	5	5	5	5	5	5
212	268	334	368	374	378	395	408	404	397	368	362
4	4	6	7	8	8	8	8	8	7	7	6
5	6	7	7	6	6	7	7	7	7	6	6
6	10	10	10	10	10	9	10	10	9	7	7
4	4	10	11	10	11	10	9	9	10	9	9
2	2	3	6	6	6	6	6	8	8	8	8
233	294	370	409	414	419	435	448	446	438	405	398
95	53	53	53	53	53	53	53	53	53	53	53
169	169	162	156	151	149	149	149	149	144	142	141
100	98	104	104	104	103	103	59	59	72	81	91
364	320	319	313	308	305	305	261	261	269	276	285
597	614	689	722	722	724	740	709	707	707	681	683

Change in number due mainly to consolidations which do not affect coverage of sample.

Unlike Table 23, Table 24 refers only to those groups which were interpolated by discontinuous sample.[13] Among groups in which continuous samples can be used, the coverage in Steam Railroads and in Communication is so high that no special discussion seems necessary. Class I Railroads, which furnish the data used here, account for more than nine tenths of all railroad business, while the coverage of telegraph and telephone companies is practically complete. The

TABLE 24

QUARTERLY NET INCOME OF CORPORATIONS:
SIZE OF SAMPLE BY PERCENTAGE OF ASSETS,
GROUPS INTERPOLATED BY DISCONTINUOUS SAMPLE[a]

Industrial Group	*1921*	*1923*	*1929*	*1937*
B. Mining	7.9	9.4	27.1	35.0
D. Manufacturing	10.4	13.0	23.0	26.0
1. Food, beverages and tobacco	2.4	6.0	13.5	15.4
2. (a) to (g) Textile products	0	.3	7.9	7.0
2. (h) and (i) Leather products	12.8	10.0	23.0	23.9
3. Lumber, stone, clay and glass products	1.4	2.3	8.4	10.0
4. Paper and printing	0	0	17.8	10.8
5. Metal products	23.1	31.2	39.9	44.6
6. Chemicals	9.7	7.8	16.3	19.5
7. (a) Rubber	0	0	57.3	72.5
(b) Miscellaneous	0	.3	10.2	29.4
E. Construction	.7	2.1	4.2	4.4
G.1 Water transportation[b]	0	4.0	..	..
K. Service[c]	0	.6	13.4	5.4
ALL GROUPS SHOWN[d]	8.4	11.3	22.1	23.5

[a] The percentages in this table are intended only as rough estimates of coverage. They represent ratios of the total assets (after deduction of reserves for depreciation) of the corporations in the sample to estimates of similar data for all corporations. For 1921 and 1923 estimates of the latter were derived from capital stock tax returns. Total assets are not given explicitly for either of these years; for 1923 they were assumed to be equal to the sum of liabilities, surplus, and par value (where given) or fair value (where par value was absent), less deficit, as reported in the *Statistics of Income* for 1924. For 1921 only fixed assets were available (*Statistics of Income* for 1922); total assets were estimated by applying the ratios of total assets (as estimated) to fixed assets which obtained in 1923. Total assets of all corporations for 1929 were taken as equal to total assets of corporations submitting balance sheets for income tax purposes. For 1937 the same procedure was followed, but minor adjustments were made to secure comparability with 1929, adjustments rendered necessary by the abolition in 1934 of the privilege of filing consolidated returns. These adjustments were based on the assumption that the ratio of assets other than taxable investments to total assets would

[13] The second category discussed in §2 above.

have been the same in 1934 as it was in 1933, had consolidated returns still been permissible in the latter year.

Even for 1929 the accuracy of these percentages, as a measure of the coverage of the sample, depends upon the validity of the assumption that the degree of consolidation in the tax returns of all corporations (for years in which consolidation was allowed) was the same as the degree of consolidation present in the sample. Consolidated returns were always preferred, when they were available, in the compilation of the sample data, while the consolidation of returns for tax purposes was surrounded, even before 1934, by varying restrictions. On the other hand large corporations, overrepresented in the sample, are perhaps more likely to file consolidated tax returns than small ones. If the former consideration outweighs the latter the percentages for 1929 (and presumably also for 1937) understate the coverage of the sample, and vice versa. No consolidation of capital stock tax returns was permitted in 1921 and 1923; no adjustment (such as was made in 1937) could be made on this account, and it is possible that the percentages in these years are understatements. The comparison carried out between 1933 and 1934 (mentioned above) suggests that this error is not important.

Finally, in none of the years mentioned did all corporations in fact report balance sheet data. However, if we may judge by fair value of capital stock, 98.9 percent of all corporations did so in 1923; by compiled receipts, 97.5 percent of all corporations did so in 1937. It appears, then, that the slight overstatement of coverage on this account cannot be large.

[b] For water transportation data for all corporations are available only for 1921 and 1923; therefore no estimate of coverage is possible for 1929 and 1937.

[c] As pointed out in the text, the sample covers only K.1 Laundries, hotels and restaurants, and K.2 Amusements. In terms of gross income these two subgroups represent about two thirds of the entire Service group. However, coverage can be computed only in relation to the whole group K, and this has been done. Coverage of the two subgroups is understated.

[d] Excluding water transportation in 1929 and 1937. No data are available for M.1 Miscellaneous.

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coverage of Public Utilities by the two samples used is somewhat less satisfactory. The first sample (95 companies reporting net operating income to the Bureau of the Census), used for 1920–1927, has gross revenues amounting to about two thirds of the combined revenues reported in the electric light and power, street railways and manufactured gas censuses for 1927. We know nothing, on the other hand, about the distribution of the sample among these three different kinds of activity. The second sample (53 companies whose net incomes are tabulated by the Federal Reserve Bank of New York), used for 1928–38, is smaller than the first; in 1937 it had a coverage, on the basis of total assets, of 24 percent. The total assets figures for the entire industry used for this computation are those reported for electric light and power (including affiliated gas undertakings) and street railways in the census inquiries of that year. The coverage of this sample is understated inasmuch as the census data for street railways include some intercorporate duplication, and overstated insofar as such duplication exists also in our sample—indeed it is overstated on another count, since we have no census data for in-

dependent gas companies. As between minor divisions, so far as we can judge from an inspection of the composition of the sample, all three kinds of activity—electric light and power, manufactured gas, and street railways—are represented fairly evenly.

The various samples used are admittedly biased, in that they over-represent large and successful corporations. Means of overcoming this bias, and some further tests of their representativeness, will be discussed later in this appendix.

§10. *Seasonal Adjustment*

With the corporations classified, the next step was to remove the seasonal. In theory this procedure might have been left until after interpolation, but the variations between the seasonal movements of different corporations in the same subdivision make such a plan unsatisfactory unless an identical sample is used. It might be supposed that lack of correlation between the seasonals of corporations in the same subdivision indicated that the residual variation also lacked correlation: in other words that the subdivisions were meaningless or that the sample was too small to yield significant results. But this would not be a fair inference, for individual corporations in a given subgroup gave evidence of conforming more closely after seasonal adjustment than before.

In two subdivisions—D.5 (a) Iron and steel and D.5 (c) Automobiles and parts—identical samples were used in all except the earliest years and the seasonal was removed after interpolation. This method was rendered feasible by the fact that the available sample provides very high coverage in these subgroups. In all other cases, however, the seasonal was removed corporation by corporation in spite of the extra work involved. Besides being the only really satisfactory method of using a sample of varying composition, the examination of each corporation individually is more likely to reveal errors, inconsistencies or lack of comparability, for individual items which seem to fall outside the picture can be checked back to the original reports.

The standard method of seasonal adjustment was to subtract the mean of the absolute differences from trend. In nearly half the cases, including all the larger and more important corporations, a properly centered 4-quarter moving average (i.e. mean of five quarters, the first and last items halved) was used as the trend and a positional mean[14] of the differences taken. In a fair number of cases a seasonal adjustment which varied in some simple manner from year

[14] Generally a compromise between arithmetic mean and median, e.g. mean of the central observations.

to year was used. In the other half of the cases, including especially the smaller corporations, deviations from a linear trend were taken.

§11. *Semi-Annual Data*

Where the quarterly data were deficient, but there appeared to be good half-yearly data, the latter were allocated among quarters as follows: After removal of the seasonal, the half-yearly figures were halved, and a properly centered 2-quarter moving average taken of the result (i.e. mean of three items, first and third being halved).

Half years:		18			50			66	
Half years halved:	9		9	25		25	33		33
Assumed quarterly figures:		13			21		27	31	

This procedure may, of course, alter turning points. It can readily be seen that, should the true maximum or minimum occur in a first or third quarter, the recorded turn may come as much as two quarters too early but only one quarter too late. With the true turning point in the second or fourth quarter, the recorded turn may come two quarters late but only one quarter early. It was thought better to supplement the quarterly data in this manner in spite of this danger. For the totals for Manufacturing and Mining, and for most of the constituent subdivisions, the danger may be neglected. The textile, leather and rubber products subgroups are the only ones which depend heavily on semi-annual data: in the case of these minor divisions the turning points are perhaps somewhat uncertain.

The next step is the actual interpolation, which will now be described in some detail.

§12. *Method of Interpolation*

Let X, Y, Z ($Z = X + Y$) be the statutory net income after taxes, or deficit, for "net income" corporations, "no net income" or "deficit" corporations, and all corporations respectively as reported in the *Statistics of Income* for the year in question.

Let x, y, z ($z = x + y$) be the aggregate net income after taxes, or deficit, reported in the available sample by corporations showing net income for the year, by corporations showing a deficit for the year, and by all corporations in the sample respectively.

Let the suffixes 1, 2, 3, 4 denote similar totals for each quarter.

Now in principle we might interpolate as follows:

$$Z_1 = \frac{Z}{z} z_1, \text{ etc.} \tag{1}$$

Z/z being what we have called a "raising factor." Unfortunately, however, the available sample is almost always biased. On the whole corporations in the sample do better (in a few groups or for periods of a few years, worse) than the universe as reported in the *Statistics of Income*. Now if the total net income reported in the *Statistics of Income* for all corporations in the subgroup is small compared with the net income reported for "net income" corporations and the deficit reported for "no net income" corporations, or is small compared with either of these, this bias becomes extremely important. The above formula then becomes unsatisfactory for two reasons. In the first place, bias of this sort may make Z/z very large compared with either X/x or Y/y, thus greatly magnifying errors inherent in the sample itself. (In a few cases indeed Z/z may become infinite or negative in certain years, thus making the above formula not merely unsatisfactory but altogether useless.) In the second place, it can readily be shown that (Z/z being positive) if $X/x < Y/y$ (i.e. the sample is favorably biased) the use of the formula will underestimate the variation during the year (i.e. the true dispersion of Z_1, Z_2, Z_3 and Z_4) when Z is positive, and exaggerate this variation when Z is negative. If $X/x > Y/y$ (the less usual case) a converse statement holds.

These considerations make it imperative to interpolate the data for corporations with net incomes for the year, and for those with deficits for the year, as separate operations. Although this rule has not been adhered to with perfect consistency, the standard method of interpolation used has been the following:

$$\left.\begin{aligned} X_1 &= \frac{X}{x}x_1, \text{ etc.} \\ Y_1 &= \frac{Y}{y}y_1, \text{ etc.} \\ Z_1 &= X_1 + Y_1, \text{ etc.} \end{aligned}\right\} \qquad (2)$$

It is possible, however, that the bias may be such that y (or occasionally x) is zero for a particular subgroup in a particular year. In a few cases of this sort where X/Y was very large numerically (or, with x zero, very small) it seemed appropriate to revert to formula (1). In the majority of such cases, on the other hand, a further assumption was introduced, namely that the variation from one quarter to another is similar for the "net income" corporations and for the "deficit" corporations. "Similar" has, of course, to be defined; the interpretation chosen was that the proportionate variation of the quarterly totals about

their means for the year was the same, with of course opposite sign, for both sets of corporations. Where y was zero the difference between each quarter and the mean, as computed for the "net income" corporations, was multiplied by Y/X and subtracted from the mean for the "deficit" corporations. This yields formulae (3.1) and (3.2):

$$\left.\begin{aligned} (y = \text{zero}) \quad X_1 &= \frac{X}{x} x_1, \text{ etc.} \\ Y_1 &= \frac{Y}{4} - \left(X_1 - \frac{X}{4}\right)\frac{Y}{X}, \text{ etc.} \\ Z_1 &= X_1 + Y_1, \text{ etc.} \end{aligned}\right\} \tag{3.1}$$

$$\left.\begin{aligned} (x = \text{zero}) \quad Y_1 &= \frac{Y}{y} y_1, \text{ etc.} \\ X_1 &= \frac{X}{4} - \left(Y_1 - \frac{Y}{4}\right)\frac{X}{Y}, \text{ etc.} \\ Z_1 &= X_1 + Y_1, \text{ etc.} \end{aligned}\right\} \tag{3.2}$$

The assumption implicit in this third set of formulae could be checked to some extent. The expressions

$$\frac{Y}{4} - \left(X_1 - \frac{X}{4}\right)\frac{Y}{X}, \text{ etc.}$$

were calculated in a large number of cases in which y was not zero. The agreement between Y_1 etc. calculated by formula (2) and the above expression from formula (3.1) was found to be very fair. Furthermore the existence of the bias already discussed may make Y/y (occasionally X/x) uncomfortably large, even though y (or x) does not vanish. A limit depending on the group (roughly from 10 to 50) was set on the permissible size of Y/y (or X/x). If this limit was exceeded, formula (3.1), or with X/x large (3.2), was used; or a mean was taken of the results obtained from formulae (2) and (3).

§13. *Amplitude of Fluctuation within Each Year*

It has already been remarked that the sample is favorably biased, in the sense that in nearly all years and subgroups there is better representation of net income corporations than of deficit corporations. It was precisely in order to take account of this trouble (among others) that the methods of interpolation described in the preceding section, and carried out independently in each subgroup, were developed.

These methods depend upon the use of raising factors, not indeed for the net income of all corporations in a given subgroup, but for net income and for deficit, after segregation into annual net income and deficit classes. If the net income corporations in the sample were truly representative of all net income corporations, in each subgroup, and if the same were true of deficit corporations, no further correction would be needed. Unfortunately, however, this is not the case, and a little reflection will show why.

For the fact that the sample is favorably biased means that, among net income corporations, those with a high ratio of net income to sales are overrepresented. Let us assume that among the net income corporations in the subgroup, the sample is truly representative of the fluctuations both in sales and in the deductions from sales which have to be made by businessmen in order to reach net income. We have no reason to doubt that this is so. In that case the use of raising factors, operating upon the net income in the sample, to obtain the net income of the net income corporations in the subgroup, will understate quarter by quarter the fluctuation around the quarterly mean for the year. Among the deficit corporations on the other hand, the fact that the sample is favorably biased implies that those with a low ratio (regardless of sign) of deficit to sales are overrepresented. This means that (with the same assumption about sales and deductions from sales as before) the use of raising factors will overstate quarter by quarter the fluctuation of the deficit of the corporations in the subgroup around its mean for the year.

It might be thought that, when the items for the net income and deficit corporations are added together, these two sorts of bias would cancel out, since one overstates while the other understates the fluctuation during the year. No doubt to some extent they do. Certainly in the elimination of bias due to the unduly favorable experience of the sample the initial segregation of net income and deficit corporations in each year and subgroup, described in the preceding section, is by far the most important step. Nevertheless we can by no means assume that the remaining bias due to this cause, among the net income and deficit corporations considered separately, will fail to influence the results. It therefore remains to be considered whether the amplitude of fluctuation within each year is appropriate; if not, we must make a suitable adjustment on this score.

§14. *Overlapping Data*

The basic method of interpolation allows for variation in the composition of the sample from year to year. However by constructing a

series of identical samples two years at a time it is perfectly possible to extrapolate the calculations of any given year into the preceding or succeeding year. Thus, by means of the raising factors appropriate to the year 1936, a sample whose composition is the same in 1935 as in 1936 can be used to obtain (by extrapolation) a second value for net income in the last quarter of 1935, which may then be compared with the value already obtained (by interpolation), by means of the raising factors appropriate to 1935. In this fashion a continuous series of overlapping segments may be computed, yielding two values each, one obtained by interpolation and the other by extrapolation, for every first quarter and for every fourth quarter (except of course for the terminal quarters of the period). Such a procedure has been followed throughout for those groups in which the methods here described were used (i.e. all groups where usable quarterly data exist, except C. Public Utilities, F. Railroads, and H. Communication). The results of these overlapping calculations are presented in considerable detail in Table 26 of this appendix. They are reproduced for three main series in Charts VI and VII.[15]

In principle, the pairs of values for any given quarter should of course coincide. To a considerable extent in minor groups and subgroups, and to a much lesser extent in major groups, e.g. Mining and Manufacturing, they may fail to do so because of classification difficulties. The *Statistics of Income* classification, that is to say, may not be consistent from year to year.[16] It is clear that we cannot derive continuous series for the net income arising in many of the individual minor groups and subgroups shown in Table 26 without making elaborate and perhaps doubtful adjustments. This is in line with our general knowledge about the detailed industrial breakdown in the *Statistics of Income*, which is seldom regarded as comparable from year to year in individual subgroups.[17]

This expectation is confirmed by a casual inspection of the degree to which the overlapping calculations in Table 26 suggest defects of comparability from year to year. In some minor groups and subgroups

[15] The extrapolated values are in general computed from a slightly smaller sample than the interpolated values. Moreover, the segregation between net income and deficit classes is also different. For these reasons we cannot attain complete equality between the movements shown by overlapping segments from fourth quarter to first quarter in any given subgroup; but the movements disclosed by successive pairs of estimates are nearly always in the same direction.

[16] The difficulty created in this connection by the abolition in 1934 of the privilege of filing consolidated returns is discussed in §18 below.

[17] The breakdown ostensibly available for many items in the *Statistics of Income* is even more detailed than that presented in Tables 23 and 26 and used in this study.

it may be possible to make the adjustments required to secure continuously comparable series, along the lines to be indicated presently; in others it is certainly not possible to do so. We have chosen to derive continuous data from Table 26 for only three series: B. Mining, D. Manufacturing, and "Other Nonmanufacturing" (E, G.1, K.1, K.2 and M.1 combined). The extensive detail of Table 26 is presented mainly in order to show, through overlapping calculations, the difficulty of using a detailed breakdown, and to illustrate the derivation of the continuously comparable totals, for the three groups mentioned, in Table 28. However, this material can undoubtedly be used to obtain continuous series for other industrial groupings than the three shown in Table 28, on lines similar to those now to be indicated, by any readers who are interested in doing so.

§15. *Amplitude Adjustment*

So much for subgroups. On the other hand the lack of continuous comparability in the data for major groups (Manufacturing, Mining, etc.), as revealed by overlapping values in Table 26, cannot be explained by classification difficulties except to a minor extent. Much of the divergence between extrapolated and interpolated values has of course, like the classification difficulties which are in part responsible for it, disappeared in the process of summing subgroups. Remaining discontinuities revealed by the overlapping of the annual segments, as these segments are computed for major groups, are to be traced to either: (1) failure (for reasons discussed in the preceding section) of the interpolation as carried out in Table 26 completely to eliminate the favorable bias inherent in the sample; or (2) defects in the sample itself, other than those already discussed, or in the *Statistics of Income* totals.

The situation in regard to the divergence of overlapping values, revealed by Table 26, can be seen most clearly in Charts VI and VII. For example, excessive amplitude of fluctuation is very apparent in the Mining segment for 1930, and in the Manufacturing segments for 1931 and 1935. Since the basis of interpolation throughout has been the mean annual level, the following "amplitude adjustment" naturally suggests itself. Deviations from the mean of the year on which the segment is based are computed for each segment and multiplied by a correction factor which is greater than unity where amplitude is deficient, less than unity where amplitude is excessive (the more usual case). The corrected deviations are then added back to the mean annual value. The constants are chosen so as to lead as

nearly as possible to coincidence among pairs of overlapping values throughout the period as a whole.

Such a correction, of course, can be applied only in groups sufficiently comprehensive to exclude serious classification difficulties. That it affords a reasonably satisfactory means of dealing with residual bias under (1) above is suggested by the comparison shown for Manufacturing in Chart VI, and for the other series in Chart VII. The data in Table 26 for Mining, Manufacturing and Other Nonmanufacturing are reproduced in Table 27 after appropriate adjustment for amplitude. The following are the years in which the data in Table 27 have been adjusted for amplitude:

Mining	1921, 1926–28, 1930–33, 1935, 1937, 1938
Manufacturing	1925, 1926, 1928, 1930–33, 1935, 1938
Other Nonmanufacturing	1923, 1927, 1928, 1931, 1933, 1935–38

As may be seen from Charts VI and VII, the discrepancies revealed by overlapping values are drastically reduced in Mining from 1925 onward and in Manufacturing in 1924 and all later years. The effectiveness of the adjustment in the remaining series, for Other Nonmanufacturing, is less marked. These results suggest that the interpolation is most satisfactory in Mining since 1925 and in Manufacturing since 1924, and that the data in Mining and Manufacturing prior to these years, and in Other Nonmanufacturing throughout the period, are of considerably less value. The discrepancies remaining in Table 27, and in the lower of each pair of diagrams in Charts VI and VII, probably reflect inadequate size of the sample in early years and may be due also, in the case of Other Nonmanufacturing, to classification difficulties.

§16. *Precision of the Estimates*

The success or failure of the amplitude adjustment in compensating for discontinuities between successive segments, and the need or absence of need for a further graduation, or "continuity adjustment" once amplitude is appropriate, may provide some indication of the value of the corporate sample as an interpolating medium. For this reason, the extent of the residual discontinuities, after adjustment for amplitude, will be described briefly. The situation can be summarized by computation of the mean divergence between pairs of overlapping values in Table 27. Since both members of each pair of values are derived from virtually the same sample data, and since the purpose of the amplitude adjustment is to minimize the dis-

crepancies, the result of such a calculation yields no true measure of sampling error, but it does throw light, however uncertain, upon the precision of the data.

The mean errors have been related both to the mean level (without regard to sign) of net income in the group during the period indicated, and also to its extreme range during the whole period, because of the difficulty of devising a single base for comparison. The conclusion that the Mining and Manufacturing data have only limited value in the early years is strengthened: this was to be ex-

TABLE 25

QUARTERLY NET INCOME OF CORPORATIONS: PRECISION OF THE ESTIMATES
Mean Divergence of Overlapping Data[a]

Industrial Group	*Mean Divergence (without regard to sign)*	*Mean Value of Data (without regard to sign)*	*Mean Divergence as Percent of Mean Value*	*Range between Extreme Values of Data during Entire Period*	*Mean Divergence as Percent of Range*
	$ million	$ million		$ million	
Mining, 1920–25	22.2	50.4	44	229.7	10
Mining, 1925–38	4.8	34.1	14	229.7	2
Manufacturing, 1920–24	178.9	517.5	35	1607.1	11
Manufacturing, 1924–38	34.6	528.5	7	1607.1	2
Mining, 1920–38	9.6	38.7	25	229.7	4
Manufacturing, 1920–38	66.6	522.1	13	1607.1	4
Other Nonmanufacturing, 1921–38	12.0	47.2	25	283.1	4

[a] The overlapping data from which these divergences are computed will be found in Table 27. The mean values and extreme ranges to which these divergences are related were computed from the data in Table 28.

pected from the data on size of sample in Tables 23 and 24. The Other Nonmanufacturing data stack up moderately well with the rest. On the whole the errors in Manufacturing, although larger in absolute terms than those in Mining, appear to be relatively somewhat smaller, perhaps because of the greater violence of the fluctuations in the latter group.

§17. *Continuity Adjustment*

As regards (2) above, the discrepancies still apparent between overlapping segments after application of the amplitude adjustment,

TABLE 26

STATUTORY NET INCOME AFTER TAXES, SHOWING OVERLAPS, QUARTERLY 1920–38

All Corporations, Selected Industrial Groups

Millions of current dollars

Data are shown in this table for all industrial divisions in which interpolation was carried out by discontinuous sample. For each first quarter the upper figure is obtained by extrapolation from the preceding year, the lower figure by interpolation within the current year. For each fourth quarter the upper figure is obtained by interpolation within the current year, the lower figure by extrapolation from the succeeding year. Statutory net income corresponds to the definition adopted in Revenue Acts prior to 1936. Throughout this table the sum of the four interpolated values for any year checks with the corresponding annual data printed in the *Statistics of Income*. None of the data in this table have been adjusted for amplitude or continuity, but all are adjusted for seasonal variation.

MAJOR GROUP B. MINING

Year and Quarter	*B. Total Mining*[a]	*Minor Groups*			
		1. Metal Mining	2. Coal Mining	3. Oil and Gas	4. Other Minerals
1920					
i	93.0	9.8	40.3	26.2	16.0
ii	115.3	1.2	57.3	32.6	23.0
iii	101.0	−16.5	73.4	32.1	12.0
iv	41.8	−30.2	67.9	22.4	−15.8
	102.9	−3.9	41.4	54.8	4.7
1921					
i	3.0	−33.3	57.3	−9.8	−7.5
	−1.1	−5.4	29.9	−16.4	−7.7
ii	−72.2	−31.0	10.0	−32.2	−12.3
iii	−104.6	−37.5	−27.7	−17.9	−12.8
iv	−83.3	−27.3	−17.4	−24.9	−6.5
	−64.5	−9.1	−1.7	−31.3	−8.2
1922					
i	−103.6	−82.0	−.8	−11.2	−.5
	−89.6	−52.1	8.4	−24.4	−2.4
ii	1.9	−5.3	24.6	−6.6	−3.3
iii	17.1	8.9	27.3	−16.6	3.3
iv	45.1	16.4	34.3	−6.9	3.8
	20.1	−7.8	36.6	−12.5	3.3

[a] To obtain the total for group B, data for minor groups B.1 to B.4 were raised to include minor group B.5 (Miscellaneous mining).

TABLE 26 (continued)

MINING (continued)

Year and Quarter	*B. Mining*[a]	*Minor Groups* 1.	2.	3.	4.
1923					
i	48.9	24.7	21.8	−8.3	11.7
	14.6	−4.3	29.7	−18.0	7.1
ii	11.3	4.4	20.9	−20.9	7.1
iii	−40.1	−2.2	15.7	−53.4	4.5
iv	−67.3	−7.1	−4.4	−53.6	4.6
	−54.4	−6.8	−13.0	−34.5	4.9
1924					
i	.8	−5.9	13.3	−10.2	4.6
	30.3	−4.0	4.2	22.0	6.4
ii	−31.0	−3.0	−16.7	−12.6	4.4
iii	−69.8	−11.1	−17.8	−39.4	4.7
iv	−24.9	−1.9	−23.1	−4.7	7.5
	3.7	1.2	−14.3	18.1	5.5
1925					
i	4.6	3.1	−16.0	8.5	9.3
	46.8	6.0	−6.5	43.5	6.3
ii	44.6	1.4	−12.7	53.1	6.0
iii	50.8	5.2	−1.2	42.0	6.7
iv	46.4	9.6	−7.4	38.5	8.1
	19.7	5.8	−1.4	8.9	4.6
1926					
i	55.8	13.4	−8.7	44.3	8.6
	29.7	9.9	−.5	12.6	5.0
ii	61.9	8.4	10.8	31.3	6.0
iii	62.1	9.9	4.8	34.5	7.5
iv	61.3	16.1	12.3	18.1	9.4
	69.5	20.2	−2.4	38.7	7.6
1927					
i	40.3	11.7	9.8	5.9	9.3
	37.7	10.3	−3.1	19.9	7.5
ii	−13.6	8.7	−6.4	−24.6	9.2
iii	−9.9	4.7	−3.1	−18.4	7.2
iv	−19.7	6.3	−15.3	−16.0	6.4
	−19.8	8.2	−8.6	−23.7	6.4

[a] To obtain the total for group B, data for minor groups B.1 to B.4 were raised to include minor group B.5 (Miscellaneous mining).

TABLE 26 (continued)

MINING (continued)

Year and Quarter	B. Mining[a]	Minor Groups 1.	2.	3.	4.
1928					
i	−13.1	7.7	−15.8	−10.3	5.9
	−19.6	10.3	−17.1	−16.6	6.0
ii	18.2	16.3	.4	−7.3	8.2
iii	34.1	21.2	−5.9	7.3	9.7
iv	55.8	32.5	−1.9	10.7	11.2
	54.3	40.6	.5	4.1	7.3
1929					
i	49.0	35.2	−1.8	1.6	11.2
	41.1	41.0	−.8	−7.1	7.3
ii	46.9	34.2	−6.5	10.5	7.4
iii	62.9	40.4	−.7	12.3	8.3
iv	37.0	29.4	−6.2	3.5	9.8
	80.9	36.1	−3.9	30.9	9.0
1930					
i	−9.5	21.5	−20.9	−14.8	8.2
	12.6	16.7	−22.8	9.5	7.5
ii	8.2	−3.5	−12.9	17.6	5.8
iii	−22.8	−15.3	−3.5	−5.3	3.2
iv	−63.9	−21.9	1.4	−38.7	1.5
	−26.7	−10.9	2.9	−22.5	2.6
1931					
i	−76.4	−22.2	−8.1	−39.0	.3
	−33.1	−11.5	−5.3	−17.8	1.4
ii	−76.7	−11.9	−3.5	−55.9	−1.4
iii	−68.8	−22.6	−15.1	−26.1	−1.6
iv	−83.5	−26.4	−27.2	−22.2	−2.6
	−70.4	−16.3	−14.9	−36.9	2.9
1932					
i	−64.3	−23.5	−29.8	−3.4	−3.9
	−53.2	−14.7	−23.5	−13.0	1.2
ii	−26.9	−15.7	−19.2	11.6	−2.5
iii	−67.3	−16.6	−15.0	−27.4	−3.8
iv	−84.4	−32.5	−11.2	−20.7	−14.1
	−78.9	−35.2	−12.6	−8.7	−11.1

[a] To obtain the total for group B, data for minor groups B.1 to B.4 were raised to include minor group B.5 (Miscellaneous mining).

TABLE 26 (continued)

MINING (continued)

Year and Quarter	B. Mining[a]	Minor Groups 1.	2.	3.	4.
1933					
i	−136.4	−20.3	−21.2	−81.4	−2.6
i	−143.3	−21.7	−33.9	−59.7	−7.5
ii	−113.4	−18.7	−25.3	−48.9	−4.3
iii	11.9	−2.9	−.1	13.8	−.4
iv	58.1	4.8	−.7	48.0	−2.0
iv	20.3	3.4	−10.8	23.7	2.1
1934					
i	41.4	3.1	10.5	25.7	−3.6
i	20.6	−.2	11.6	7.2	0
ii	−7.3	4.7	−7.0	−3.5	−.1
iii	−25.7	.6	−15.0	−6.5	−1.3
iv	−18.8	−1.5	−9.1	−4.6	−.8
iv	−35.4	−9.0	−3.9	−16.3	.6
1935					
i	−7.3	4.3	−18.9	8.8	0
i	−8.8	1.6	−1.4	−6.4	.9
ii	−2.5	5.0	−2.3	−3.0	.4
iii	−22.9	5.7	−17.0	−6.7	.6
iv	.2	11.3	−13.9	2.7	2.5
iv	−2.4	11.8	−15.1	1.0	2.7
1936					
i	20.0	9.7	1.8	5.2	2.8
i	13.7	10.4	−.9	1.8	2.9
ii	9.3	11.4	−8.5	3.5	4.1
iii	12.9	16.4	−12.4	4.5	5.4
iv	31.0	21.7	−5.4	9.0	4.3
iv	33.4	23.7	.8	3.0	4.4
1937					
i	44.5	31.6	−12.0	17.0	5.1
i	47.3	35.8	−5.1	8.8	5.1
ii	55.8	39.2	−4.4	10.2	6.5
iii	37.5	30.9	−10.0	10.2	5.4
iv	10.3	14.5	−11.5	7.0	3.1
iv	25.3	22.7	−15.0	13.6	4.3
1938					
i	−9.5	3.8	−11.6	1.9	1.9
i	1.6	8.6	−14.1	5.2	2.3
ii	−12.3	4.2	−14.1	−2.4	.4
iii	−16.5	6.3	−16.1	−8.0	1.8
iv	−2.4	18.6	−11.8	−9.9	1.2

[a] To obtain the total for group B, data for minor groups B.1 to B.4 were raised to include minor group B.5 (Miscellaneous mining).

TABLE 26 (continued)

MAJOR GROUP D. MANUFACTURING

Year and Quarter	*Major Group D*		*Minor Groups*			
	Total Manufacturing[b]	Total of All Groups Available	D.1 Total Food, Beverages and Tobacco	Subgroups		
				(a) Food Products	(b) Beverages	(c) Tobacco Products
1920						
i	838.5	478.7		81.8		
ii	789.6	450.7		56.5		
iii	630.5	359.2		24.0		
iv	80.0	43.2		−92.7		
	−127.8	−126.1		−169.4	−12.6	
1921						
i	70.1	38.2		−32.7		
	37.0	−24.4		−39.5	12.6	
ii	−161.2	−143.8		−37.5	−15.8	
iii	−128.5	−129.3		28.0	−3.7	
iv	−220.2	−179.5		−57.4	−3.5	
	154.0	54.2		−12.0	−6.8	
1922						
i	179.8	66.3		14.4	10.6	
	284.5	160.5	33.8	17.7	−.4	16.5
ii	476.3	268.7	41.4	17.7	2.7	21.0
iii	600.6	338.8	31.8	17.5	−4.7	19.0
iv	889.0	501.5	140.2	116.8	4.3	19.1
	751.6	465.0	160.9	130.4	7.7	22.8
1923						
i	1,042.5	588.1	88.2	67.2	3.0	18.0
	798.2	578.8	98.3	74.9	2.0	21.4
ii	943.6	684.2	83.6	65.5	−1.3	19.4
iii	714.1	517.8	71.1	52.0	−1.9	21.0
iv	629.3	456.3	74.6	57.4	1.1	16.1
	430.8	357.4	75.7	57.1	3.8	14.8
1924						
i	841.5	610.2	106.9	83.8	2.1	21.0
	710.6	589.5	95.1	72.4	3.6	19.1
ii	504.7	418.7	86.9	63.2	3.9	19.8
iii	474.4	393.6	106.3	81.9	5.0	19.4
iv	644.8	534.9	89.9	64.6	5.4	19.9
	595.1	482.5	89.5	64.1	3.2	22.2

[b] For 1926 and earlier years the absence of data for some minor groups makes it necessary to allow for their inclusion by raising the total of all groups available.

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Major Group D		Minor Groups			
	Total Manufacturing[b]	Total of All Groups Available	D.1	Subgroups (a)	Subgroups (b)	Subgroups (c)
1925						
i	716.5	594.4	89.5	64.0	7.4	18.1
	745.4	604.4	97.6	73.3	5.2	19.1
ii	781.8	633.9	91.8	63.5	5.9	22.4
iii	778.6	631.3	88.2	57.6	7.4	23.2
iv	848.4	687.9	97.6	68.5	5.2	23.9
	751.4	667.1	94.0	67.4	5.6	21.0
1926						
i	896.0	726.5	111.1	80.1	7.8	23.2
	745.2	719.6	101.6	71.7	8.7	21.2
ii	757.4	731.4	108.4	78.1	8.4	21.9
iii	818.6	790.5	106.1	70.2	10.0	25.9
iv	802.5	775.0	103.9	66.1	7.8	30.0
	754.1	668.9	86.1	55.1	5.2	25.8
1927						
i	752.7	726.9	114.9	73.6	9.1	32.2
	710.3		101.6	64.8	9.2	27.6
ii	616.2		93.7	56.8	9.8	27.1
iii	628.0		103.4	67.7	11.3	24.4
iv	625.1		103.4	67.8	9.0	26.6
	633.2		102.8	76.4	5.6	20.8
1928						
i	635.6		104.0	67.8	11.7	24.5
	691.7		109.1	76.8	9.0	23.3
ii	750.2		118.0	84.8	8.6	24.6
iii	911.1		114.2	78.5	12.8	22.9
iv	1,013.7		145.7	101.7	9.7	34.3
	918.3		124.5	85.7	7.7	31.1
1929						
i	964.1		136.3	97.8	11.7	26.8
	919.8		118.3	84.1	9.5	24.7
ii	1,022.8		126.5	86.7	10.4	29.4
iii	1,060.8		137.2	94.7	13.2	29.3
iv	858.9		127.3	87.5	9.9	29.9
	864.8		127.6	69.8	7.2	50.6

[b] For 1926 and earlier years the absence of data for some minor groups makes it necessary to allow for their inclusion by raising the total of all groups available.

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Major Group D		Minor Groups			
	Total Manufacturing[b]	Total of All Groups Available	D.1	Subgroups (a)	Subgroups (b)	Subgroups (c)
1930						
i	633.6		109.0	79.5	9.7	19.8
	549.6		105.6	65.1	6.5	34.0
ii	362.7		102.4	63.3	8.1	31.0
iii	19.1		89.9	51.0	9.1	29.8
iv	−129.5		79.8	48.3	6.5	25.0
	−32.4		75.2	34.5	1.3	39.4
1931						
i	−93.9		82.7	49.4	7.4	25.9
	18.0		82.2	38.6	2.2	41.4
ii	−157.1		59.4	27.4	1.6	30.4
iii	−309.9		37.9	10.1	1.3	26.5
iv	−539.4		26.6	5.1	0	21.5
	−329.7		48.6	14.1	0	34.5
1932						
i	−536.7		28.8	1.5	.6	26.7
	−316.8		49.8	9.9	.6	39.3
ii	−476.7		25.5	−4.1	.4	29.2
iii	−587.0		7.8	−17.6	−2.0	27.4
iv	−525.6		−2.0	−20.5	.2	18.3
	−486.0		36.6	20.6	10.2	5.8
1933						
i	−429.5		3.6	−14.4	−1.0	19.0
	−422.5		45.9	26.6	7.5	11.8
ii	−103.4		61.5	41.1	8.4	12.0
iii	270.8		61.8	44.8	12.7	4.3
iv	251.9		61.3	28.1	20.0	13.2
	279.0		74.1	45.6	19.3	9.2
1934						
i	251.3		80.9	35.9	21.1	23.9
	242.2		94.2	54.1	22.4	17.7
ii	256.7		88.1	47.2	16.6	24.3
iii	83.6		96.4	58.7	15.6	22.1
iv	132.3		79.0	48.7	13.4	16.9
	23.5		88.5	57.9	15.9	14.7

[b] For 1926 and earlier years the absence of data for some minor groups makes it necessary to allow for their inclusion by raising the total of all groups available.

TABLE 26 (continued)
MANUFACTURING (continued)

Year and Quarter	Major Group D		Minor Groups			
	Total Manufacturing[b]	Total of All Groups Available	D.1	Subgroups (a)	Subgroups (b)	Subgroups (c)
1935						
i	333.3		77.0	46.0	11.3	19.7
i	251.0		87.3	54.8	14.5	18.0
ii	249.9		70.9	36.1	16.6	18.2
iii	344.3		90.9	50.6	21.6	18.7
iv	613.6		127.4	75.0	22.8	29.6
iv	571.1		126.9	66.9	27.9	32.1
1936						
i	528.3		107.0	64.7	18.4	23.9
i	489.7		108.7	61.0	23.9	23.8
ii	590.0		109.7	59.4	28.1	22.2
iii	680.2		134.5	72.9	34.0	27.6
iv	783.3		134.5	78.0	31.7	24.8
iv	780.7		115.8	60.1	30.2	25.5
1937						
i	811.6		111.9	62.9	26.0	23.0
i	798.1		91.4	44.1	23.7	23.6
ii	748.3		89.8	37.8	29.7	22.3
iii	641.0		88.6	33.2	30.2	25.2
iv	336.4		73.3	19.9	27.6	25.8
iv	530.0		65.9	14.3	24.1	27.5
1938						
i	84.0		84.2	43.7	19.8	20.7
i	134.6		75.8	37.1	16.8	21.9
ii	−3.4		74.7	30.2	21.3	23.2
iii	196.4		85.6	34.6	26.6	24.4
iv	566.1		101.1	54.1	20.8	26.2

[b] For 1926 and earlier years the absence of data for some minor groups makes it necessary to allow for their inclusion by raising the total of all groups available.

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups			
	D.2 Total Textiles and Leather Products	Subgroups		
		(a) to (g) Textiles	(h) and (i) Total Leather Products	(h) Boots and Shoes	(i) Other Leather Products
1920					
i					−4.1
ii					3.9
iii					−22.1
iv					−49.5
					−127.8
1921					
i					−20.3
					−52.5
ii					−16.8
iii					−12.3
iv					12.9
					6.4
1922					
i					2.6
					−4.3
ii					−8.5
iii					4.8
iv					17.4
					21.6
1923					
i					5.7
					14.0
ii					8.7
iii					−12.3
iv					−10.1
					−53.0
1924					
i					7.1
					−2.7
ii					−7.0
iii					−1.6
iv					13.9
					4.7

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups				
	D.2	Subgroups			
		(a) to (g)	(h) and (i)	(h)	(i)
1925					
i					.7
					5.0
ii					4.7
iii					−4.2
iv					2.0
					16.6
1926					
i					−4.7
					−2.0
ii					−25.1
iii					2.9
iv					33.9
					5.4
1927					
i					14.4
	80.1	68.8	11.3	9.2	2.1
ii	68.4	53.6	14.8	10.6	4.2
iii	86.1	66.3	19.8	13.2	6.6
iv	76.8	57.6	19.2	11.8	7.4
	44.9	27.3	17.6	13.3	4.3
1928					
i	22.0	6.4	15.6	9.0	6.6
	36.2	25.3	10.9	7.0	3.9
ii	47.4	30.8	16.6	8.2	8.4
iii	63.1	52.5	10.6	9.1	1.5
iv	50.8	48.2	2.6	8.1	−5.5
	80.3	69.5	10.8	9.4	1.4
1929					
i	−6.9	5.8	−12.7	−1.8	−10.9
	50.8	48.1	2.7	7.3	−4.6
ii	45.0	42.0	3.0	8.7	−5.7
iii	51.3	33.9	17.4	11.3	6.1
iv	12.5	3.5	9.0	10.4	−1.4
	−14.9	−3.0	−11.9	8.7	−20.6

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups				
	D.2	Subgroups			
		(a) to (g)	(h) and (i)	(h)	(i)
1930					
i	−1.4	−17.0	15.6	8.1	7.5
	−25.9	−33.4	7.5	6.3	1.2
ii	−48.4	−49.8	1.4	2.8	−1.4
iii	−114.1	−96.6	−17.5	−1.4	−16.1
iv	−116.2	−95.2	−21.0	−1.2	−19.8
	−120.4	−100.3	−20.1	−1.0	−19.1
1931					
i	−70.6	−58.6	−12.0	1.1	−13.1
	−54.4	−43.0	−11.4	1.5	−12.9
ii	−47.2	−37.7	−9.5	.6	−10.1
iii	−83.5	−75.1	−8.4	−.9	−7.5
iv	−124.6	−116.0	−8.6	−2.1	−6.5
	−73.6	−68.4	−5.2	−.8	−4.4
1932					
i	−158.4	−149.4	−9.0	−3.9	−5.1
	−86.2	−81.3	−4.9	−2.7	−2.2
ii	−127.2	−111.9	−15.3	−3.6	−11.7
iii	−77.5	−72.9	−4.6	−4.2	−.4
iv	−50.7	−30.3	−20.4	−3.1	−17.3
	−91.4	−74.4	−17.0	−2.2	−14.8
1933					
i	−7.5	−6.1	−1.4	−1.0	−.4
	−46.8	−42.4	−4.4	.7	−5.1
ii	16.3	9.0	7.3	2.9	4.4
iii	70.9	59.5	11.4	3.8	7.6
iv	57.7	52.0	5.7	4.3	1.4
	110.6	98.8	11.8	5.1	6.7
1934					
i	12.9	11.0	1.9	4.3	−2.4
	50.2	41.0	9.2	5.1	4.1
ii	4.7	1.1	3.6	4.2	−.6
iii	−30.8	−28.1	−2.7	2.8	−5.5
iv	−13.3	−16.9	3.6	3.0	.6
	−71.0	−66.2	−4.8	4.2	−9.0

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups				
	D.2	Subgroups			
		(a) to (g)	(h) and (i)	(h)	(i)
1935					
i	24.6	18.2	6.4	3.6	2.8
	−12.0	−12.9	.9	4.9	−4.0
ii	9.8	−.9	10.7	4.8	5.9
iii	26.7	20.5	6.2	4.6	1.6
iv	53.4	39.4	14.0	4.8	9.2
	37.9	29.6	8.3		
1936					
i	34.3	27.4	6.9	4.9	2.0
	28.0	21.2	6.8		
ii	42.4	35.2	7.2		
iii	52.0	46.7	5.3		
iv	67.2	59.6	7.6		
	114.6	105.2	9.4		
1937					
i	63.4	55.2	8.2		
	106.1	96.2	9.9		
ii	60.6	53.2	7.4		
iii	−12.1	−12.7	.6		
iv	−76.4	−72.7	−3.7		
	−36.2	−29.8	−6.4		
1938					
i	−102.4	−96.8	−5.6		
	−66.0	−57.8	−8.2		
ii	−45.6	−43.8	−1.8		
iii	13.8	10.8	3.0		
iv	54.8	46.8	8.0		

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	*Minor Groups*						
	D.3 Total Lumber, Stone, Clay and Glass Products	Subgroups			D.4 Total Paper and Printing	Subgroups	
		(a) Saw-mill and Planing-mill Products	(b) Carriages, Wagons, Furniture, Baskets	(c) Stone, Clay and Glass Products		(a) Paper and Pulp	(b) Printing and Publishing
1920							
i				32.0			
ii				33.3			
iii				24.6			
iv				15.6			
				13.9			
1921							
i				20.9			
				21.2			
ii				3.7			
iii				4.3			
iv				2.1			
				4.8			
1922							
i				20.6			
			10.9	20.6			
ii			10.7	22.1			
iii			10.5	25.7			
iv			10.4	25.6			
			16.0	32.8			
1923							
i			10.5	37.0			
			13.4	46.2			
ii			17.3	42.9			
iii			17.4	35.0			
iv			17.4	27.3			
			18.8	13.3			
1924							
i			16.3	43.9			
			9.9	29.6			
ii			8.4	24.2			
iii			10.8	29.5			
iv			18.0	41.9			
	49.6	−3.8	21.0	32.4			

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups						
	D.3	Subgroups			D.4	Subgroups	
		(a)	(b)	(c)		(a)	(b)
1925							
i			12.2	42.2			
	68.0	19.9	14.1	34.0			
ii	62.6	12.5	12.6	37.5			
iii	60.7	12.7	10.0	38.0			
iv	72.1	18.8	22.0	31.3			
	65.0	19.9	19.6	25.5			
1926							
i	64.0	15.7	14.9	33.4			
	62.4	16.7	13.4	32.3	51.3	15.9	35.4
ii	61.5	8.6	15.7	37.2	63.4	28.1	35.3
iii	53.6	7.4	11.2	35.0	59.7	22.3	37.4
iv	52.2	5.5	3.5	43.2	62.8	24.2	38.6
	20.1	−.4	−7.0	27.5	46.4	16.1	30.3
1927							
i	46.5	10.4	7.4	28.7	70.2	29.4	40.8
	33.3	2.7	.6	30.0	50.9	18.6	32.3
ii	34.5	−1.7	7.8	28.4	57.3	23.8	33.5
iii	41.9	−2.0	17.3	26.6	59.4	23.8	35.6
iv	14.1	−1.1	−7.9	23.1	65.5	28.1	37.4
	25.5	2.8	−7.8	30.5	79.1	32.2	46.9
1928							
i	32.1	−2.8	12.8	22.1	65.5	30.2	35.3
	41.8	1.5	6.5	33.8	75.2	32.4	42.8
ii	26.0	−.3	−6.0	32.3	71.3	21.4	49.9
iii	46.5	8.2	10.8	27.5	76.1	22.3	53.8
iv	60.9	8.2	26.7	26.0	49.5	13.9	35.6
	46.1	1.2	20.5	24.4	39.9	14.1	25.8
1929							
i	42.2	0	15.2	27.0	63.9	11.4	52.5
	40.0	.9	10.8	28.3	55.2	13.0	42.2
ii	54.6	22.9	4.0	27.7	69.5	19.1	50.4
iii	38.2	1.1	2.6	34.5	75.1	25.9	49.2
iv	33.5	.4	10.8	22.3	86.2	32.9	53.3
	54.3	9.7	26.3	18.3	57.4	18.7	38.7

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups						
	D.3	Subgroups			D.4	Subgroups	
		(a)	(b)	(c)		(a)	(b)
1930							
i	6.4	−.2	−12.2	18.8	72.7	21.1	51.6
	9.0	−7.5	.4	16.1	47.3	9.8	37.5
ii	−15.3	−15.5	−8.2	8.4	37.5	5.5	32.0
iii	−15.9	−20.6	−2.2	6.9	26.3	5.5	20.8
iv	−68.9	−30.7	−35.8	−2.4	19.9	8.0	11.9
	−73.1	−20.4	−25.7	−27.0	28.9	11.6	17.3
1931							
i	−53.0	−37.5	−14.4	−1.1	14.0	1.4	12.6
	−33.7	−14.3	−10.3	−9.1	25.5	5.4	20.1
ii	−48.1	−33.3	−12.3	−2.5	10.2	8.7	1.5
iii	−66.2	−35.6	−22.0	−8.6	2.9	−6.1	9.0
iv	−79.6	−35.9	−21.8	−21.9	−34.2	−28.6	−5.6
	−69.4	−36.2	−22.5	−10.7	−14.9	−7.1	−7.8
1932							
i	−81.1	−33.0	−16.0	−32.1	−24.3	−17.5	−6.8
	−67.9	−33.3	−17.3	−17.3	4.8	.3	4.5
ii	−84.8	−33.5	−20.8	−30.5	−19.4	−15.7	−3.7
iii	−82.1	−29.2	−20.9	−32.0	−62.6	−22.4	−40.2
iv	−71.3	−27.9	−24.6	−18.8	−34.7	−28.9	−5.8
	−64.0	−15.6	−19.4	−29.0	−11.3	−31.8	20.5
1933							
i	−53.8	−27.7	−17.4	−8.7	−31.3	−17.1	−14.2
	−48.8	−15.3	−11.4	−22.1	−22.6	−19.0	−3.6
ii	−29.6	−10.2	−9.9	−9.5	−21.8	−5.9	−15.9
iii	−16.2	−5.9	−7.4	−2.9	31.9	25.8	6.1
iv	−7.0	−15.4	−.5	8.9	24.4	7.8	16.6
	−9.8	−15.5	−3.6	9.3	.6	4.2	−3.6
1934							
i	−10.8	−10.8	−2.5	2.5	39.1	15.8	23.3
	−11.4	−16.4	−4.2	9.2	6.3	10.0	−3.7
ii	−3.6	−4.2	−3.5	4.1	20.6	9.7	10.9
iii	−10.9	−9.2	−3.5	1.8	20.5	1.5	19.0
iv	−10.6	−9.0	−3.1	1.5	31.0	20.0	11.0
	−14.0	−6.9	−1.9	−5.2	27.6	16.5	11.1

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups						
	D.3	Subgroups			D.4	Subgroups	
		(a)	(b)	(c)		(a)	(b)
1935							
i	9.4	−10.0	−3.4	22.8	28.5	14.2	14.3
	.2	−7.7	−2.5	10.4	26.0	9.6	16.4
ii	1.0	−6.9	−.5	8.4	25.3	8.5	16.8
iii	.8	−4.2	−.7	5.7	34.4	11.9	22.5
iv	21.9	−2.0	3.5	20.4	36.0	17.4	18.6
	31.6	4.5		27.1	24.2	1.9	22.3
1936							
i	10.3	−.6		10.9	41.1	20.7	20.4
	16.7	−.7		17.4	30.4	6.4	24.0
ii	28.4	1.8		26.6	43.7	13.5	30.2
iii	31.9	4.5		27.4	49.3	20.1	29.2
iv	53.6	21.7		31.9	54.3	32.8	21.5
	42.7	13.8		28.9	49.9	23.7	26.2
1937							
i	51.4	18.5		32.9	55.1	33.5	21.6
	43.6	14.3		29.3	49.1	22.7	26.4
ii	52.6	19.1		33.5	57.0	31.1	25.9
iii	37.4	10.0		27.4	40.7	26.7	14.0
iv	16.6	1.4		15.2	29.0	7.4	21.6
	26.7	7.2		19.5	89.8	30.7	59.1
1938							
i	−13.9	−15.7		1.8	−3.7	4.4	−8.1
	−12.0	−13.9		1.9	21.0	19.5	1.5
ii	−16.5	−16.6		.1	−.1	−7.7	7.6
iii	13.8	−.4		14.2	11.1	−1.5	12.6
iv	43.8	15.8		28.0	42.6	17.4	25.2

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	*Minor Groups*			
	D.5 Total Metal Products	Subgroups		
		(a) Iron and Steel	(c) Auto-mobiles	(b), (d) to (m) Other Metal Products
1920				
i	283.6	106.0	54.6	123.0
ii	273.9	106.4	36.9	130.6
iii	247.2	129.0	22.9	95.3
iv	176.9	95.8	10.8	70.3
	176.7	41.6	70.1	65.0
1921				
i	84.4	55.9	−3.9	32.4
	43.3	9.2	35.8	−1.7
ii	−55.9	−24.3	3.2	−34.8
iii	−139.4	−34.4	−53.0	−52.0
iv	−166.6	−55.3	−46.6	−64.7
	−29.8	−24.9	−13.2	8.3
1922				
i	.7	−31.7	97.2	−64.8
	19.5	−12.2	22.0	9.7
ii	123.4	15.3	74.3	33.8
iii	172.6	19.2	67.3	86.1
iv	220.0	24.6	59.2	136.2
	155.3	21.4	55.3	78.6
1923				
i	353.4	53.0	82.7	217.7
	238.1	33.1	75.9	129.1
ii	349.4	98.7	84.8	165.9
iii	267.7	89.2	51.9	126.6
iv	233.0	87.0	41.0	105.0
	239.3	84.0	56.2	99.1
1924				
i	250.9	75.1	66.5	109.3
	301.4	72.4	89.8	139.2
ii	197.6	48.1	35.0	114.5
iii	199.1	28.8	50.0	120.3
iv	234.3	40.6	71.8	121.9
	214.6	40.5	46.7	127.4

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups			
	D.5	Subgroups		
		(a)	(c)	(b), (d) to (m)
1925				
i	311.5	46.6	102.0	162.9
	292.7	46.8	64.4	181.5
ii	314.2	55.0	92.8	166.4
iii	357.5	62.0	104.1	191.4
iv	369.0	54.9	111.4	202.7
	325.8	53.2	95.2	177.4
1926				
i	392.9	68.2	114.6	210.1
	322.7	66.0	95.6	161.1
ii	321.5	69.4	91.0	161.1
iii	358.6	79.5	96.9	182.2
iv	371.1	78.6	93.9	198.6
	336.7	77.7	56.3	202.7
1927				
i	373.6	65.4	118.1	190.1
	315.8	63.3	68.2	184.3
ii	261.9	45.6	69.6	146.7
iii	233.4	37.3	60.2	135.9
iv	250.2	31.7	68.7	149.8
	265.0	40.9	51.8	172.3
1928				
i	273.9	45.4	99.2	129.3
	295.7	56.5	78.2	161.0
ii	313.5	61.8	70.6	181.1
iii	391.0	78.2	82.3	230.5
iv	433.7	100.2	70.0	263.5
	416.6	81.2	106.9	228.5
1929				
i	482.2	127.0	70.5	284.7
	469.7	101.2	124.2	244.3
ii	495.0	116.7	121.4	256.9
iii	512.3	118.8	119.7	273.8
iv	409.1	99.0	62.9	247.2
	363.7	77.9	50.8	235.0

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups			
	D.5	Subgroups		
		(a)	(c)	(b), (d) to (m)
1930				
i	339.7	83.9	62.5	193.3
	268.0	63.2	53.9	150.9
ii	163.6	38.0	34.7	90.9
iii	52.0	13.9	14.2	23.9
iv	3.7	−4.1	29.6	−21.8
	96.5	.4.8	26.8	64.9
1931				
i	−68.3	−18.8	9.5	−59.0
	7.2	−5.8	14.5	−1.5
ii	−28.8	−17.5	35.3	−46.6
iii	−144.0	−40.6	−10.5	−92.9
iv	−280.5	−63.9	−30.7	−185.9
	−161.3	−28.5	−20.9	−111.9
1932				
i	−277.8	−68.0	−46.7	−163.1
	−199.7	−51.9	−30.6	−117.2
ii	−279.9	−81.1	−67.0	−131.8
iii	−265.8	−78.5	−58.7	−128.6
iv	−248.0	−60.4	−43.5	−144.1
	−229.6	−53.1	−18.4	−158.1
1933				
i	−223.6	−64.3	−47.6	−111.7
	−224.9	−56.7	−37.0	−131.2
ii	−96.0	−37.4	3.9	−62.5
iii	39.9	−6.0	38.7	7.2
iv	33.6	−9.4	12.8	30.2
	38.5	−9.0	27.8	19.7
1934				
i	44.8	−11.7	16.1	40.4
	42.8	−9.2	22.4	29.6
ii	104.2	46.8	11.4	46.0
iii	−10.0	−43.2	24.6	8.6
iv	45.4	−15.1	14.7	45.8
	−15.8	−69.6	17.4	36.4

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	*Minor Groups*			
	D.5	Subgroups		
		(a)	(c)	(b), (d) to (m)
1935				
i	137.9	22.1	41.3	74.5
	93.3	−10.3	38.0	65.6
ii	94.3	−8.3	34.2	68.4
iii	130.5	−4.7	49.6	85.6
iv	259.0	46.7	77.8	134.5
	222.0	12.6	78.1	131.3
1936				
i	227.5	27.7	68.3	131.5
	194.4	5.3	68.5	120.6
ii	257.2	17.2	89.4	150.6
iii	287.9	36.9	77.5	173.5
iv	332.9	42.1	82.6	208.2
	333.2	39.0	94.1	200.1
1937				
i	364.3	64.9	67.1	232.3
	358.3	60.9	74.7	222.7
ii	349.4	51.3	74.9	223.2
iii	358.6	62.4	89.3	206.9
iv	193.9	−5.0	56.2	142.7
	266.1	38.9	66.4	160.8
1938				
i	52.3	−10.2	6.2	56.3
	44.7	−15.3	−4.8	64.8
ii	−43.7	−54.4	−12.7	23.4
iii	23.4	−31.1	8.4	46.1
iv	262.5	78.6	79.8	104.1

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups						
	D.6 Total Chemicals, Drugs and Petroleum Refining	Subgroups			D.7 Total Rubber Products and Misc. Mfg.	Subgroups	
		(a) Chemicals	(b) Drugs	(c) Petroleum Refining		(a) Rubber Products	(b) Misc. Mfg. incl. Radios and Aircraft
1920							
i	85.4	22.5	16.6	46.3			
ii	83.1	20.0	16.3	46.8			
iii	85.5	20.2	15.3	50.0			
iv	−7.1	−59.6	8.9	43.6			
	−6.9	−38.0	12.4	18.7			
1921							
i	−14.1	−14.7	−2.6	3.2			
	−9.5	−10.4	−3.1	4.0			
ii	−21.5	−10.4	−7.3	−3.8			
iii	−6.2	−8.2	−.1	2.1			
iv	33.0	21.4	2.7	8.9			
	91.6	10.5	36.0	45.1			
1922							
i	17.4	3.6	1.2	12.6			
	80.0	2.1	28.9	49.0			
ii	79.6	1.0	26.1	52.5			
iii	93.4	6.7	35.5	51.2			
iv	87.9	9.2	42.1	36.6			
	78.4	5.5	37.2	35.7			
1923							
i	93.3	11.0	50.0	32.3			
	84.0	7.3	44.0	32.7			84.8
ii	82.0	8.2	45.3	28.5			100.3
iii	62.7	4.5	37.0	21.2			76.2
iv	47.2	1.0	34.0	12.2			66.9
	43.0	1.7	25.3	16.0			20.3
1924							
i	95.6	1.2	43.6	50.8			89.5
	122.0	4.7	34.8	82.5			34.2
ii	83.2	3.5	34.0	45.7			25.4
iii	25.6	4.8	39.4	−18.6			23.9
iv	102.8	7.5	41.7	53.6			34.1
	79.7	7.6	38.1	34.0			44.4

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups						
	D.6	Subgroups			D.7	Subgroups	
		(a)	(b)	(c)		(a)	(b)
1925							
i	104.2	8.2	37.5	58.5			34.1
	107.5	7.2	38.7	61.6			33.6
ii	132.8	10.0	47.3	75.5			27.8
iii	105.2	10.6	37.6	57.0			23.9
iv	116.8	10.3	55.9	50.6			30.4
	137.7	11.9	53.9	71.9			28.0
1926							
i	124.7	10.4	57.0	57.3			38.5
	146.9	12.1	55.0	79.8	36.7	2.2	34.5
ii	170.4	15.6	54.4	100.4	31.3	1.1	30.2
iii	169.9	15.8	53.9	100.2	39.7	2.5	37.2
iv	125.7	18.7	41.5	65.5	25.4	1.6	23.8
	135.0	20.3	43.2	71.5	39.2	18.2	21.0
1927							
i	84.2	14.1	50.1	20.0	23.1	−1.3	24.4
	97.0	15.6	43.2	38.2	31.6	12.0	19.6
ii	68.8	15.8	46.0	7.0	31.6	12.2	19.4
iii	68.7	16.5	54.1	−1.9	35.1	11.3	23.8
iv	86.2	18.6	41.2	26.4	28.9	6.5	22.4
	95.4	19.3	31.5	44.6	20.5	−.5	21.0
1928							
i	117.1	18.8	55.0	43.3	21.0	−1.8	22.8
	121.6	17.4	46.6	57.6	12.1	−10.4	22.5
ii	159.6	21.0	53.6	85.0	14.4	−8.8	23.2
iii	185.1	24.4	53.5	107.2	35.1	2.8	32.3
iv	223.2	33.6	73.2	116.4	49.9	10.0	39.9
	174.8	30.9	65.5	78.4	36.1	8.5	27.6
1929							
i	201.9	33.1	61.8	107.0	44.5	12.8	31.7
	152.1	27.0	54.1	71.0	33.7	11.3	22.4
ii	203.9	28.3	55.0	120.6	28.3	8.1	20.2
iii	216.7	31.7	61.2	123.8	30.0	−1.1	31.1
iv	184.3	29.9	63.9	90.5	6.0	−7.1	13.1
	240.9	33.3	61.4	146.2	35.8	1.6	34.2

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	*Minor Groups*						
	D.6	Subgroups			D.7	Subgroups	
		(a)	(b)	(c)		(a)	(b)
1930							
i	117.4	22.7	46.4	48.3	−10.2	−12.7	2.5
	147.3	24.4	44.0	78.9	−1.7	−1.9	.2
ii	140.6	22.4	39.6	78.6	−17.7	−12.6	−5.1
iii	23.2	13.8	33.8	−24.4	−42.3	−22.1	−20.2
iv	−15.6	5.7	28.9	−50.2	−32.2	−16.5	−15.7
	−17.3	1.2	35.2	−53.7	−22.2	−9.9	−12.3
1931							
i	33.1	14.0	29.5	−10.4	−31.8	−9.3	−22.5
	19.1	7.5	36.3	−24.7	−27.9	−3.4	−24.5
ii	−83.8	9.8	28.7	−122.3	−18.8	−3.6	−15.2
iii	−29.9	7.2	20.2	−57.3	−27.1	−9.1	−18.0
iv	−2.1	3.4	4.2	−9.7	−45.0	−9.6	−35.4
	−8.5	2.8	14.2	−25.5	−50.6	−12.3	−38.3
1932							
i	17.5	5.5	15.4	−3.4	−41.4	−6.0	−35.4
	2.9	3.7	22.1	−22.9	−20.5	−8.5	−12.0
ii	39.3	−1.7	20.5	20.5	−30.2	−7.8	−22.4
iii	−52.6	.6	−1.0	−52.2	−54.2	−11.4	−42.8
iv	−67.7	3.6	−11.3	−60.0	−51.2	−11.3	−39.9
	−59.0	4.0	−5.3	−57.7	−67.3	−9.6	−57.7
1933							
i	−83.8	2.7	2.1	−88.6	−33.1	−6.1	−27.0
	−80.2	3.0	4.8	−88.0	−45.1	−7.7	−37.4
ii	−22.0	7.4	23.3	−52.7	−11.8	−1.2	−10.6
iii	81.7	13.6	31.2	36.9	.8	5.1	−4.3
iv	65.6	11.9	28.1	25.6	16.3	5.4	10.9
	54.6	15.6	27.8	11.2	10.4	4.6	5.8
1934							
i	55.7	14.4	42.0	−.7	28.7	2.6	26.1
	49.7	18.9	39.0	−8.2	10.4	2.2	8.2
ii	33.6	17.4	37.6	−21.4	9.1	.4	8.7
iii	18.5	13.4	30.9	−25.8	−.1	−.2	.1
iv	−1.2	9.8	32.9	−43.9	2.0	.1	1.9
	4.2	10.8	28.7	−35.3	4.0	.8	3.2

TABLE 26 (continued)

MANUFACTURING (continued)

Year and Quarter	Minor Groups						
	D.6	Subgroups			D.7	Subgroups	
		(a)	(b)	(c)		(a)	(b)
1935							
i	41.1	17.7	38.4	−15.0	14.8	1.5	13.3
i	41.9	18.3	32.0	−8.4	14.3	2.5	11.8
ii	32.4	16.7	33.5	−17.8	16.2	3.7	12.5
iii	40.7	19.1	36.9	−15.3	20.3	5.7	14.6
iv	85.5	28.7	45.4	11.4	30.4	6.6	23.8
iv	101.7	79.3		22.4	26.8	7.8	19.0
1936							
i	80.6	63.6		17.0	27.5	5.9	21.6
i	86.8	66.0		20.8	24.7	7.2	17.5
ii	78.9	70.5		8.4	29.7	9.1	20.6
iii	90.9	73.6		17.3	33.7	11.0	22.7
iv	102.7	88.2		14.5	38.1	11.8	26.3
iv	90.7	79.0		11.7	33.8	10.3	23.5
1937							
i	126.8	92.4		34.4	38.7	12.6	26.1
i	115.8	83.1		32.7	33.8	10.9	22.9
ii	105.1	78.5		26.6	33.8	8.6	25.2
iii	102.5	70.4		32.1	25.3	3.8	21.5
iv	87.0	59.3		27.7	13.0	.2	12.8
iv	102.0	76.4		25.6	15.7	.9	14.8
1938							
i	59.4	34.4		25.0	8.1	1.0	7.1
i	62.2	42.3		19.9	8.9	1.2	7.7
ii	17.7	37.3		−19.6	10.1	1.7	8.4
iii	32.1	60.8		−28.7	16.6	4.8	11.8
iv	33.1	75.9		−42.8	28.2	8.1	20.1

TABLE 26 (continued)

OTHER NONMANUFACTURING

Year and Quarter	Total Other Nonmanufacturing[c]	Major and Minor Groups				
		E. Construction	G. Other Transportation	K. Service		M. Miscellaneous
			G.1 Water Transportation	K.1 Laundries, Hotels, Restaurants	K.2 Amusements[d]	M.1 Minor Transportation
1920						
i						
ii						
iii						
iv						
1921						
i	24.3	20.9				
ii	3.9	−17.0				
iii	9.3	−11.1				
iv	1.4	9.5				
	−12.7	25.1				
1922						
i	32.8	2.3				
	37.2	14.8	.5	8.7	1.8	
ii	14.7	−5.1	3.8	9.4	1.9	
iii	12.8	5.4	−9.3	10.6	2.2	
iv	45.1	14.5	6.0	9.1	1.9	
	55.4	15.8	9.9	10.7	7.6	
1923						
i	37.2	6.7	5.8	11.5	2.4	
	56.7	13.5	9.5	16.2	11.5	6.0
ii	33.6	16.0	1.6	5.0	3.5	7.5
iii	26.9	21.5	−19.5	9.6	6.8	8.5
iv	48.6	6.6	13.8	12.2	8.6	7.4
	52.1	.8	19.8	11.0	13.7	6.8
1924						
i	59.0	18.0	2.3	17.5	12.4	8.8
	52.4	11.9	−4.5	16.4	20.2	8.4
ii	43.1	22.0	3.9	4.7	5.8	6.7
iii	42.1	25.2	−4.0	6.6	8.1	6.2
iv	57.1	17.6	11.0	8.6	10.6	9.3
	52.7	17.3	7.8	8.3	10.8	8.5

[c] For 1921, data computed on basis of groups D and E; for 1922, on basis of groups E, G.1 and K.1.

[d] For 1922–24, data computed on basis of group K.1.

TABLE 26 (continued)

OTHER NONMANUFACTURING (continued)

Year and Quarter	Total Other Nonmanufacturing	Major and Minor Groups				
		E	G.1	K.1	K.2	M.1
1925						
i	56.7	22.2	.5	11.8	14.6	7.6
	38.3	16.3	−.1	9.6	7.5	5.0
ii	49.3	19.7	5.5	8.3	10.4	5.4
iii	68.6	28.4	6.1	12.3	15.1	6.7
iv	75.9	31.4	4.7	11.0	20.3	8.5
	83.2	34.8	13.2	5.2	20.8	9.2
1926						
i	49.8	31.5	−7.2	12.5	6.5	6.5
	50.5	34.6	−3.8	7.8	5.1	6.8
ii	73.3	37.7	7.1	7.1	12.0	9.4
iii	68.7	36.6	9.1	7.1	9.6	6.3
iv	18.3	−19.0	9.4	3.7	17.7	6.5
	1.6	−21.7	1.9	.2	13.8	7.4
1927						
i	51.2	17.5	7.2	11.7	8.3	6.5
	35.0	15.8	0	7.0	4.8	7.4
ii	35.4	16.4	−.5	2.7	10.8	6.0
iii	52.2	30.6	2.4	.3	14.8	4.1
iv	54.7	28.9	7.9	3.2	11.1	3.6
	47.4	16.1	12.9	5.5	4.4	8.5
1928						
i	40.0	27.2	.5	−.7	11.4	1.6
	32.4	14.8	5.4	1.6	4.5	6.1
ii	39.7	4.4	2.3	14.4	11.9	6.7
iii	40.9	19.6	6.0	−6.8	13.5	8.6
iv	90.7	43.5	11.1	.4	20.4	15.3
	63.4	37.8	7.7	−6.2	8.6	15.5
1929						
i	92.4	24.3	20.0	9.0	22.4	16.7
	59.0	24.6	12.5	−.1	8.6	13.4
ii	57.5	22.9	9.1	−.1	15.6	10.0
iii	62.8	13.7	10.8	2.0	22.7	13.6
iv	76.7	30.6	7.5	9.0	27.3	2.3
	65.4	32.0	6.4	8.2	24.0	−5.2

TABLE 26 (continued)

OTHER NONMANUFACTURING (continued)

Year and Quarter	Total Other Nonmanufacturing	Major and Minor Groups				
		E	G.1	K.1	K.2	M.1
1930						
i	50.7	10.4	8.0	1.6	25.4	5.3
	39.6	9.0	8.0	−1.4	21.3	2.7
ii	−3.2	10.4	3.7	−8.5	5.5	−14.3
iii	−2.3	17.8	−1.9	−17.7	−4.8	4.3
iv	7.2	15.9	−3.5	−6.4	4.0	−2.8
	46.2	9.8	−2.3	3.2	24.6	10.9
1931						
i	−14.0	2.4	−2.5	−14.5	−2.5	3.1
	10.7	−3.6	−1.5	−7.5	12.3	11.0
ii	−2.2	4.5	−2.0	−6.7	−2.1	4.1
iii	−55.5	−11.1	−1.5	−25.8	−15.8	−1.3
iv	−148.5	−28.0	−10.7	−48.6	−28.8	−32.4
	−139.2	−31.3	1.6	−46.0	−33.8	−29.7
1932						
i	−98.7	−21.9	−9.3	−34.2	−22.1	−11.2
	−79.1	−5.4	.4	−39.7	−27.7	−6.7
ii	−156.3	−48.3	−11.7	−54.0	−29.3	−13.0
iii	−118.0	−9.8	−6.5	−57.4	−38.8	−5.5
iv	−199.9	−50.6	−5.1	−83.2	−45.9	−15.1
	−251.3	−5.8	−10.7	−79.8	−113.6	−41.4
1933						
i	−88.0	−10.1	1.0	−58.9	−14.3	−5.7
	−147.6	−13.8	−3.2	−58.4	−60.9	−11.3
ii	−91.3	−11.2	7.1	−52.2	−33.9	−1.1
iii	−60.6	−16.6	.4	−36.3	−5.3	−2.8
iv	−111.4	−29.8	−14.9	−50.9	−7.5	−8.3
	−76.7	−22.0	1.5	−56.4	−2.4	2.6
1934						
i	−54.2	−3.2	−6.4	−38.3	−9.2	2.9
	−23.2	−3.8	7.3	−44.1	−2.2	19.6
ii	−47.1	−4.8	1.5	−43.0	−1.2	.4
iii	−60.5	−3.5	−3.7	−43.1	−7.4	−2.8
iv	−86.8	−27.0	−1.6	−39.5	−1.8	−16.9
	−151.9	−24.0	−25.5	−74.7	−6.7	−21.0

TABLE 26 (continued)

OTHER NONMANUFACTURING (continued)

Year and Quarter	Total Other Nonmanufacturing	Major and Minor Groups				
		E	G.1	K.1	K.2	M.1
1935						
i	−29.6	−1.6	−6.5	−33.5	−1.4	13.4
	−111.9	−3.3	−27.0	−76.4	−4.6	−.6
ii	−83.7	−6.1	−11.2	−65.3	1.9	−3.0
iii	−53.9	−20.8	6.6	−37.1	6.2	−8.8
iv	79.8	16.2	28.0	13.3	1.3	21.0
	38.1	21.6	19.5	−15.9	3.4	9.5
1936						
i	15.8	6.8	19.5	−23.7	.6	12.6
	−22.9	−1.6	11.9	−37.3	2.4	1.7
ii	−15.8	5.4	2.9	−33.6	4.9	4.6
iii	20.5	10.8	26.7	−27.6	10.5	.1
iv	−27.6	2.6	−17.4	−42.4	16.6	13.0
	19.2	−.2	−9.2	6.5	7.1	15.0
1937						
i	−61.2	12.1	−11.4	−59.3	19.0	−21.6
	7.2	16.7	−2.7	−23.2	13.1	3.3
ii	12.7	16.1	12.6	−22.5	6.1	.4
iii	38.8	9.6	26.7	−15.8	11.8	6.5
iv	−60.4	−15.8	−7.9	−41.7	1.1	3.9
	−47.1	−29.1	−29.8	2.1	11.5	−1.8
1938						
i	−50.8	9.1	.3	−58.8	−1.1	−.3
	−20.1	2.8	−17.2	−2.3	−2.2	−1.2
ii	−43.1	−4.6	−21.0	−10.6	−7.0	.1
iii	7.1	3.5	11.6	−12.2	3.9	.3
iv	77.2	9.4	29.5	−5.5	31.0	12.8

TABLE 27

STATUTORY NET INCOME AFTER TAXES, ADJUSTED FOR AMPLITUDE, SHOWING OVERLAPS, QUARTERLY 1920–38

All Corporations, Selected Industrial Groups

Millions of current dollars

Data are shown in this table for all industrial divisions in which interpolation was carried out by discontinuous sample. For each first quarter the upper figure is obtained by extrapolation from the preceding year, the lower figure by interpolation within the current year. For each fourth quarter the upper figure is obtained by interpolation within the current year, the lower figure by extrapolation from the succeeding year. Statutory net income corresponds to the definition adopted in Revenue Acts prior to 1936. Throughout this table the sum of the four interpolated values for any year checks with the corresponding annual data printed in the *Statistics of Income*. The data are as shown in Table 26, except that adjustment has been made for amplitude as explained in §§15–17. Seasonal adjustment has already been made throughout.

Year and Quarter	B. Mining	D. Manufacturing	E, G.1, K.1, K.2, M.1. Other Non-manufacturing
1920			
i	93.0	838.5	
ii	115.3	789.6	
iii	101.0	630.5	
iv	41.8	80.0	
	52.4	−127.8	
1921			
i	3.0	70.1	
	−20.4	37.0	24.3
ii	−70.1	−161.2	3.9
iii	−92.8	−128.5	9.3
iv	−77.9	−220.2	1.4
	−64.5	154.0	−12.7
1922			
i	−92.1	179.8	32.8
	−89.6	284.5	37.2
ii	1.9	476.3	14.7
iii	17.1	600.6	12.8
iv	45.1	889.0	45.1
	20.1	751.6	49.8

TABLE 27 (continued)

Year and Quarter	Mining	Manufacturing	Other Non-manufacturing
1923			
i	48.9	1,042.5	37.2
	14.6	798.2	50.6
ii	11.3	943.6	36.8
iii	−40.1	714.1	32.7
iv	−67.3	629.3	45.8
	−54.4	430.8	52.1
1924			
i	.8	841.5	52.0
	30.3	710.6	52.4
ii	−31.0	504.7	43.1
iii	−69.8	474.4	42.1
iv	−24.9	644.8	57.1
	3.7	662.8	52.7
1925			
i	4.6	716.5	56.7
	46.8	760.5	38.3
ii	44.6	784.2	49.3
iii	50.8	782.1	68.6
iv	46.4	827.5	75.9
	43.6	766.1	83.2
1926			
i	55.8	858.4	49.8
	46.6	763.1	50.5
ii	56.2	769.1	73.3
iii	56.3	799.7	68.7
iv	56.1	791.7	18.3
	55.3	754.1	22.9
1927			
i	49.7	766.8	51.2
	29.9	710.3	39.7
ii	−11.2	616.2	39.9
iii	−8.2	628.0	48.3
iv	−16.0	625.1	49.5
	−11.4	664.4	49.4
1928			
i	−10.8	635.6	42.1
	−11.3	714.2	43.4
ii	19.0	763.9	46.4
iii	31.7	900.6	46.8
iv	49.1	987.9	66.8
	54.3	918.3	63.4

TABLE 27 (continued)

Year and Quarter	Mining	Manufacturing	Other Non-manufacturing
1929			
i	43.6	945.7	67.4
	41.1	919.8	59.0
ii	46.9	1,022.8	57.5
iii	62.9	1,060.8	62.8
iv	37.0	858.9	76.7
	32.2	918.0	65.4
1930			
i	−9.5	633.6	50.7
	−1.9	577.6	39.6
ii	−4.1	375.7	−3.2
iii	−19.6	4.6	−2.3
iv	−40.2	−155.9	7.2
	−41.5	−149.0	8.2
1931			
i	−46.5	−117.5	−14.0
	−45.4	−126.0	−13.1
ii	−72.4	−206.0	−20.8
iii	−67.5	−275.8	−52.8
iv	−76.6	−380.6	−108.6
	−66.1	−383.9	−139.2
1932			
i	−64.8	−379.4	−78.8
	−54.9	−375.8	−79.1
ii	−37.8	−476.7	−156.3
iii	−64.0	−546.3	−118.0
iv	−75.2	−507.5	−199.9
	−69.3	−510.8	−191.9
1933			
i	−109.0	−446.9	−88.0
	−114.4	−444.0	−129.6
ii	−93.4	−108.6	−95.9
iii	−5.6	284.7	−77.4
iv	26.8	264.8	−107.9
	20.3	279.0	−76.7
1934			
i	15.1	264.2	−73.6
	20.6	242.2	−23.2
ii	−7.3	256.7	−47.1
iii	−25.7	83.6	−60.5
iv	−18.8	132.3	−86.8
	−28.7	104.1	−86.2

TABLE 27 (continued)

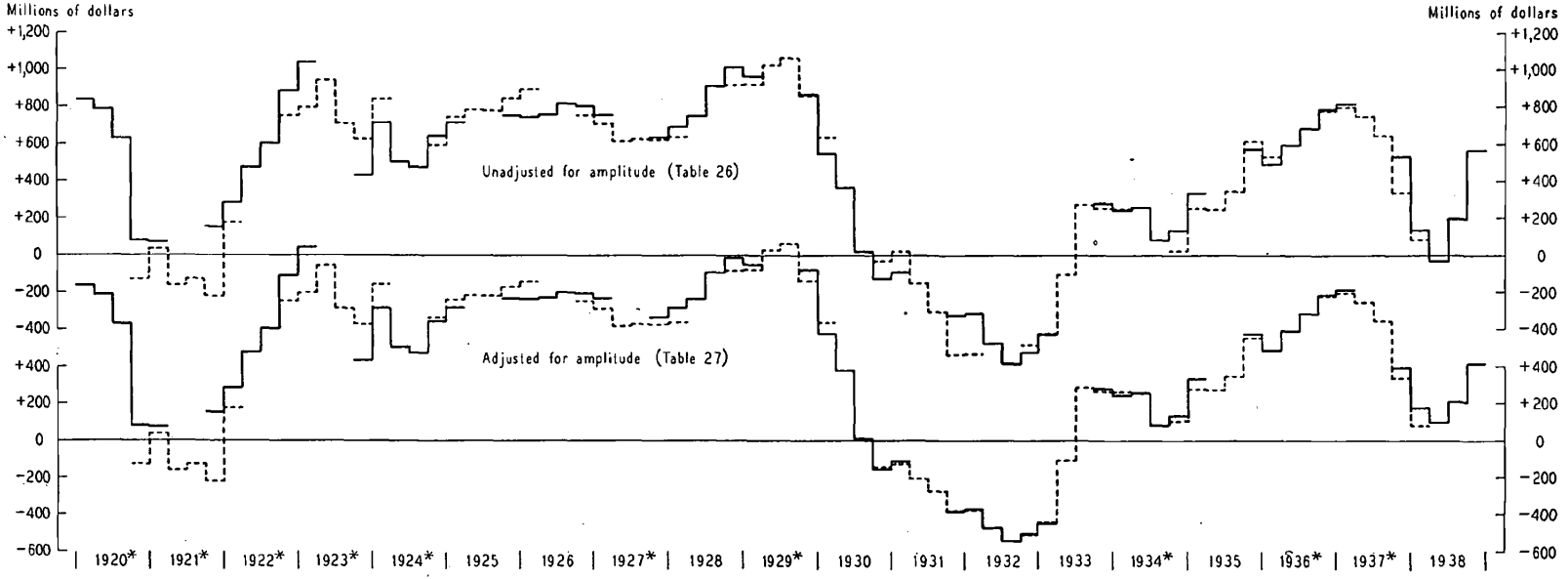
Year and Quarter	Mining	Manufacturing	Other Non-manufacturing
1935			
i	−7.3	333.3	−29.6
	−8.7	277.9	−70.2
ii	−4.0	277.1	−58.9
iii	−19.3	349.2	−47.0
iv	−2.0	554.9	6.5
	−2.4	571.1	6.5
1936			
i	12.9	489.7	−19.1
	13.7	489.7	−15.6
ii	9.3	590.0	−13.0
iii	12.9	680.2	.1
iv	31.0	783.3	−17.3
	34.3	780.7	7.4
1937			
i	44.5	811.6	−29.4
	45.2	798.1	2.6
ii	51.8	748.3	4.8
iii	37.5	641.0	15.3
iv	16.3	336.4	−24.4
	18.8	392.1	−31.4
1938			
i	.9	84.0	−20.6
	−.2	174.6	−12.5
ii	−11.3	98.7	−28.6
iii	−14.7	208.6	6.6
iv	−3.4	411.9	55.6

CHART VI

NET INCOME AFTER TAXES, MANUFACTURING

Overlapping Data, before and after Adjustment for Amplitude

(Seasonally Adjusted)



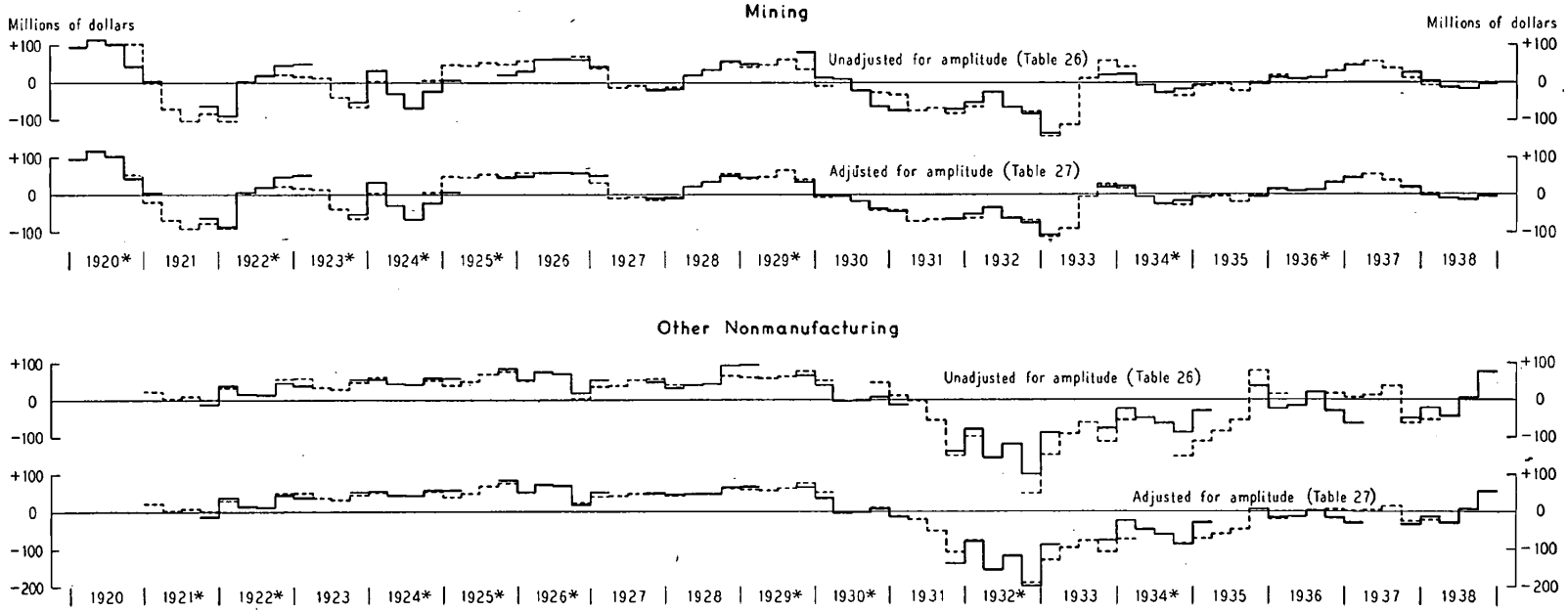
* In these years no adjustment for amplitude was made.

CHART VII

NET INCOME AFTER TAXES, MINING AND OTHER NONMANUFACTURING

Overlapping Data, before and after Adjustment for Amplitude

(Seasonally Adjusted)



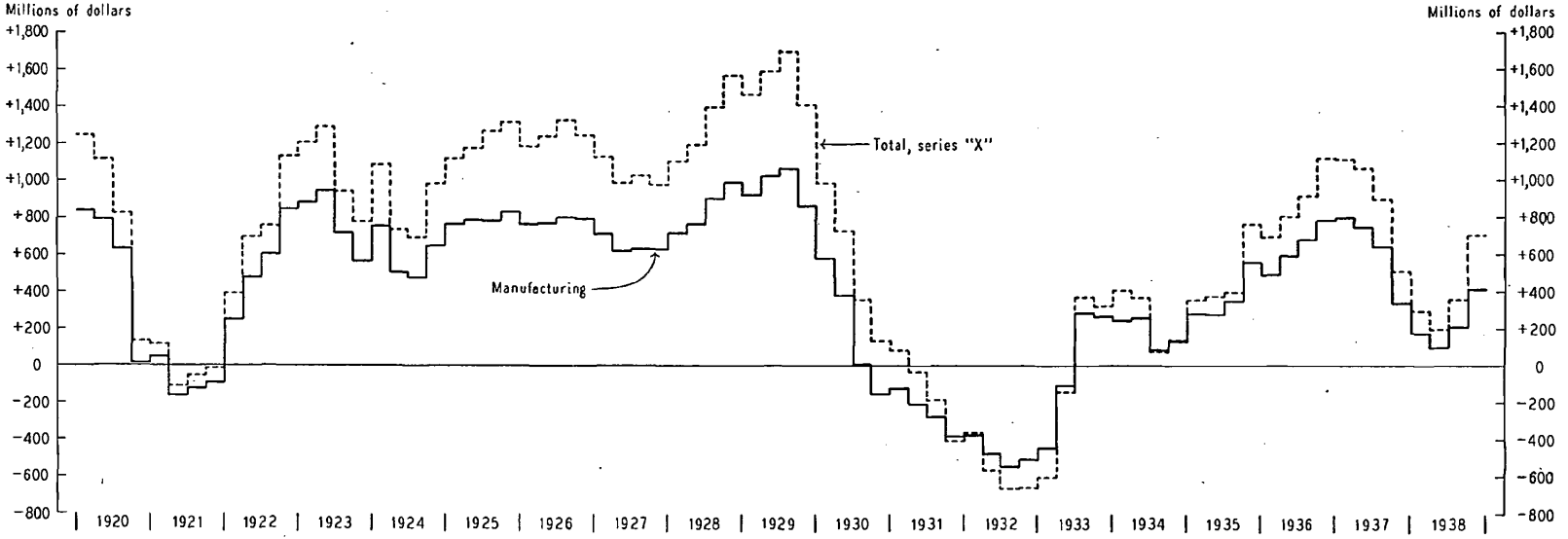
* In these years no adjustment for amplitude was made.

(Scale twice that used in Chart VI)

CHART VIII

NET INCOME AFTER TAXES, FINAL ESTIMATES

(Seasonally Adjusted)



Based on Table 28

that is, the discrepancies in Table 27 and in the lower member of each pair of series in Charts VI and VII, must be regarded as a measure of the errors involved in estimations of this kind. If we are to obtain a continuous series, the error, where appreciable, must be distributed. This "continuity adjustment" is of course arbitrary, and consists in taking two thirds of the interpolated value plus one third of the extrapolated value. In all cases, except where such adjustment has been made for continuity, the interpolated rather than the extrapolated value has been chosen as definitive. The continuity adjustment, by which a transition from Table 27 to Table 28 is made, was considered necessary in the case of the adjoining quarters, last and first respectively, of the following pairs of years:

Mining	1922–23, 1923–24, 1924–25
Manufacturing	1920–21, 1921–22, 1922–23, 1923–24
Other Nonmanufacturing	1929–30, 1933–34, 1936–37

At the junctions between all other years, the interpolated values were preferred to the extrapolated values, no adjustment for continuity being made. It will be noticed that only first and last quarters are affected by the adjustment. Since the amplitude adjustment leaves the annual sum of interpolated values unchanged, the data in Table 28 continue to check with the annual totals for net income after taxes (pre-1936 definition) as printed in the *Statistics of Income*, except for the years mentioned above, at the beginning or end of which a continuity adjustment was made. Where, however, the continuity adjustment has been required, the data in Table 28 no longer conform exactly to the annual totals. It will be seen that no such adjustment to the data in Table 27 was considered necessary in Mining and Manufacturing after 1925 and 1924 respectively. The data in Table 28 represent our final estimates, and these are reproduced, for Manufacturing and for the total, in Chart VIII.

§18. *Abolition of Consolidated Returns in 1934*

The abolition, in the Revenue Act of 1934, of the privilege of filing consolidated returns affects the comparability of the annual figures which we have interpolated, and therefore also the comparability of our quarterly figures, as between 1934 and later years on the one hand, and 1933 and earlier years on the other. The net income (pre-1936 definition) before taxes of a given corporate structure is of course independent of whether or not the structure files a consolidated return. But the industrial grouping of different parts of the structure, and also its aggregate tax liablity, are influenced by this question.

TABLE 28

FINAL ESTIMATES OF CORPORATE NET PROFITS, SEASONALLY ADJUSTED, QUARTERLY 1920–38

All Groups Interpolated

Millions of current dollars

Year and Quarter	*Interpolated by Discontinuous Sample*[a]			*Interpolated by Continuous Sample*[b]			*Total, Series "X"*[c]
	B. Mining	D. Manufacturing	E, G.1, K.1, K.2, M.1. Other Nonmanufacturing	C. Public Utilities	F. Railroads	H. Communication	
1920							
i	93	838		48	170	22	1,245
ii	115	790		48	78	17	1,114
iii	101	630		48	−25	18	821
iv	42	11		45	8	16	130
1921							
i	−20	48	24	47	−3	19	115
ii	−70	−161	4	47	47	23	−110
iii	−93	−128	9	54	83	24	−51
iv	−78	−96	1	59	78	22	−14
1922							
i	−90	250	37	64	106	26	393
ii	2	476	15	69	104	29	695
iii	17	601	13	71	24	31	757
iv	37	843	45	77	99	31	1,132
1923							
i	26	880	51	83	128	37	1,205
ii	11	944	37	91	176	32	1,291
iii	−40	714	33	89	117	28	941
iv	−63	563	46	86	114	30	776
1924							
i	20	754	52	89	141	30	1,086
ii	−31	505	43	88	99	30	734
iii	−70	474	42	87	123	35	691
iv	−15	645	57	97	158	39	981
1925							
i	33	760	38	106	141	41	1,119
ii	45	784	49	110	144	41	1,173
iii	51	782	69	122	199	44	1,267
iv	46	828	76	124	193	46	1,313

TABLE 28 (continued)

Year and Quarter	Mining	Manufacturing	Other Nonmanufacturing	Public Utilities	Railroads	Communication	Total, Series "X"₀
1926							
i	47	763	50	117	160	45	1,182
ii	56	769	73	116	181	45	1,240
iii	56	800	69	122	231	48	1,326
iv	56	792	18	132	194	50	1,242
1927							
i	30	710	40	136	161	53	1,130
ii	−11	616	40	133	154	53	985
iii	−8	628	48	136	171	52	1,027
iv	−16	625	50	145	127	47	978
1928							
i	−11	714	43	150	152	56	1,104
ii	19	764	46	151	153	59	1,192
iii	32	901	47	165	195	57	1,397
iv	49	988	67	176	227	58	1,565
1929							
i	41	920	59	181	200	61	1,462
ii	47	1,023	58	184	220	57	1,589
iii	63	1,061	63	200	249	60	1,696
iv	37	859	73	198	174	65	1,406
1930							
i	−2	578	43	199	116	50	984
ii	−4	376	−3	193	113	52	727
iii	−20	5	−2	200	125	49	357
iv	−40	−156	7	196	77	48	132
1931							
i	−45	−126	−13	178	41	49	84
ii	−72	−206	−21	175	38	52	−34
iii	−68	−276	−53	161	4	47	−185
iv	−77	−381	−109	144	−26	42	−407
1932							
i	−55	−376	−79	125	−11	35	−361
ii	−38	−477	−156	118	−49	33	−569
iii	−64	−546	−118	106	−86	31	−677
iv	−75	−508	−200	104	−16	33	−662

TABLE 28 (continued)

Year and Quarter	*Mining*	*Manufacturing*	*Other Nonmanufacturing*	*Public Utilities*	*Railroads*	*Communication*	*Total, Series "X"*[c]
1933[d]							
i	−114	−444	−130	96	−38	26	−604
ii	−93	−109	−96	93	28	35	−142
iii	−6	285	−77	99	29	40	370
iv	27	265	−98	88	5	34	321
1934[d]							
i	21	242	−40	97	51	36	407
ii	−7	257	−47	95	34	36	368
iii	−26	84	−60	84	−39	32	75
iv	−19	132	−87	86	−7	33	138
1935							
i	−9	278	−70	95	30	32	356
ii	−4	277	−59	94	31	36	375
iii	−19	349	−47	100	−26	39	396
iv	−2	555	6	104	59	43	765
1936							
i	14	490	−16	111	53	42	694
ii	9	590	−13	111	60	45	802
iii	13	680	0	122	53	48	916
iv	31	783	−9	132	126	57	1,120
1937							
i	45	798	−8	135	97	50	1,117
ii	52	748	5	139	78	46	1,068
iii	38	641	15	137	24	44	899
iv	16	336	−24	128	13	42	511
1938							
i	0	175	−12	120	−24	36	295
ii	−11	99	−29	116	−15	38	198
iii	−15	209	7	122	−6	40	357
iv	−3	412	56	134	63	43	705

[a] The data for these three groups are for statutory net income after taxes as defined prior to 1936 and are derived from the overlapping estimates in Table 27. Figures for the first and fourth quarters are the interpolated (rather than the extrapolated) values, and continue to check with the *Statistics of Income* except where graduation over year ends has been considered necessary with the help of the "continuity adjustment" described in the text (§17).

[b] The data for these three groups are interpolations by continuous sample of the annual estimates for dividends and corporate savings (i.e. residual income) reproduced

Footnotes to Table 28 continued on next page.

Footnotes to Table 28, continued.

in Table 38 from Simon Kuznets, *National Income and Its Composition* (National Bureau of Economic Research, 1941). (A very small amount of unincorporated net income, slightly over $1 million in 1929, is included in the data for Public Utilities.) Since the annual figures upon which the interpolation is based are derived from reports to the Interstate Commerce Commission and other regulatory agencies, rather than from the *Statistics of Income*, they differ in minor respects from the statutory net income after taxes (pre-1936 definition) reported to the Bureau of Internal Revenue. The interpolation was carried out as follows:

C. *Public Utilities.* For 1920–27, earnings of about 95 public utilities, as reported to the Bureau of the Census, were used (*Survey of Current Business* especially Dec. 1927, p. 48). The data are before allowance for interest payments. Interest payments (Table 40 below, and *National Income and Its Composition*) were added to dividends and savings annually, the sum being interpolated. Then interest payments were graduated, and deducted quarter by quarter, leaving dividends and savings. For 1928–38, the series for the net income of 53 public utilities compiled by the Federal Reserve Bank of New York, was used directly.

F. *Steam Railroads.* Net railway operating income for Class I roads is available quarterly as reported to the Interstate Commerce Commission. The figures were raised to include all steam railroads, and also Pullman and express companies. Interest actually paid, and other minor deductions, were then graduated and removed quarter by quarter.

The railroads were returned by the government to their owners at the end of February 1920, but their revenues continued to be guaranteed through August. Payments made to the carriers under the guaranty were supposed to be reported by them on an accrual basis, but this was not always done, and in fact some of these payments may be included in net income even in 1921 (*Statistics of Railways*, 1920, p. XL). Payments made under the guaranty were assumed to be equal to Miscellaneous Income in 1920, and were apportioned equally among the first three quarters of the year. Since the guaranty ended in August, this arrangement makes partial allowance for delay in reporting.

H. *Communication.* Interpolation was made on the basis of net operating income of telegraph and telephone companies, as compiled by the Federal Communications Commission (*Survey of Current Business*); allowance was made to exclude interest payments.

[c] This is the sum of the columns to the left, the groups shown in 1920 being raised to include Other Nonmanufacturing. Series "X" represents an attempt at complete coverage, as far as concerns the corporate field, of Mining, Manufacturing, Construction, Public Utilities and Transportation (except for pipe lines); and partial coverage of the Service industry (laundries, hotels, restaurants and amusements, but not business or professional services). As suggested in the text (Chapter V, §1; and §3 of this appendix) it represents the most comprehensive quarterly measure at present available of the return to enterprise as a whole. The main lacunae are Distribution (wholesale and retail) and Finance. Since the data on Construction and Service are less adequate throughout the period than those for the other groups, some gain in precision would probably result from the omission from the total of the series for Other Nonmanufacturing.

[d] No adjustment has been made for lack of comparability between the last quarter of 1933 and the first quarter of 1934 in the three series interpolated by discontinuous sample, due to the abolition of the privilege of filing consolidated income tax returns. For discussion see §18 of this appendix.

Fortunately the quantitative importance of the change for our purposes can readily be determined with the help of an analysis of the income accounts of the corporations affected. Such an analysis, which

the Bureau of Internal Revenue published in the *Statistics of Income* for 1934, is summarized in Table 29. Shifts of $19 million of net income out of Mining and $75 million out of Manufacturing suggest incomparabilities of the order of $5 million and $19 million respectively in our quarterly estimates. Corresponding data for Other Nonmanufacturing are not available. Since a really appropriate adjustment for this discontinuity is difficult to devise, and since moreover its magnitude, at any rate for Mining and Manufacturing, is less than the mean error calculated above (Table 25) from the data in Table 27, no adjustment has been made. In Table 28, as well as in Tables 26 and 27, the figures presented relate to the old classification up to 1933 and to the new classification for 1934 and later years.

TABLE 29

QUARTERLY NET INCOME OF CORPORATIONS

Data Relating to Change of Classification in 1934[a]

	Figures Apply to the Year 1934	
	Ratio of Statutory Net Income after Taxes, All Corporations, Old Classification, to the Same, New Classification	Net Income, Old Classification, less Net Income, New Classification
		$ million
B. TOTAL MINING	.395	+18.9
D. TOTAL MANUFACTURING	1.105	+75.1
1. (a) Food	1.034	+7.2
(b) Beverages	1.155	+10.5
(c) Tobacco	1.010	+.8
2. (a) to (g) Textiles	1.580	−1.7
(h), (i) Leather	.907	−1.3
3. (a), (b) Lumber	.973	+1.4
(c) Stone, clay and glass	1.017	+.3
4. (a) Paper, pulp	.995	−.2
(b) Printing and publishing	.873	−4.7
5. Metal products	1.031	+5.6
6. Chemicals, drugs and petroleum refining	1.537	+53.8
7. (a) Rubber	.867	−.3
(b) Miscellaneous	1.199	3.8

[a] See discussion in §18 of this appendix.

§19. *Understatement of Corporate Income through Use of Unaudited Data*

The material relating to corporate income published in the *Statistics of Income* upon which rest both the National Bureau income totals and also such of the foregoing interpolations as were carried out by discontinuous sample, is compiled from unaudited returns.[18] That a considerable volume of additional taxes is assessed, both upon individuals and upon corporations, as a result of audit and litigation, may be seen from data published in the *Annual Reports of the Commissioner of Internal Revenue*. In order to measure the understatement of corporate income in the *Statistics of Income* due to this cause, we need not only a breakdown of the additional assessments as between corporations and individuals, but also a distribution of the additional assessments made in any fiscal year among the tax years to which they relate. This gap is being filled by a study at present being conducted by Thomas C. Atkeson of the Bureau of Internal Revenue, the results of which are not yet available. I have, however, made some tentative estimates of the understatement of corporate incomes resulting from the use of the unaudited data, based upon material supplied to me by Mr. Atkeson. The first three columns in Table 30 show the derivation of estimates of the additions to corporate income disclosed by the audit, while the last three columns present the unaudited data for comparison. It will be seen that the revisions are substantial, amounting in 1929 to about a billion dollars. Moreover the estimates take no account of the reduction in negative net income in cases in which the audit results in the assessment of taxes against a corporation originally reporting no (positive) net income. They are therefore minimum estimates of the revisions necessary.

The problems which would have to be faced in any attempt to incorporate such revisions, either in the annual income totals (Tables 4 and 5), or in the quarterly estimates contained in this appendix and in Table 12, are difficult indeed. Estimates of the required revision for years prior to 1927 must remain hazardous in the extreme, for Mr. Atkeson informs me that the records of the Bureau of Internal Revenue of additional taxes assessed in fiscal years prior to 1930 were not maintained in such a manner as to allow their distribution between tax years and between corporations and individuals. Estimates for years since 1935 cannot yet be made on a satisfactory

[18] It will be recalled that the National Bureau figures for Public Utilities, Railroads and Communication (Table 38) do not rely upon the *Statistics of Income*, and our own interpolations for these groups (by continuous sample, Table 28) are equally untainted in this respect.

basis because the record itself is not yet sufficiently complete, and substantial additional assessments in respect of 1936 and later years may still be anticipated. In making estimates for these more recent years there will be the additional complication that the size distribution of net income will have to receive attention, owing to the introduction of graduated income taxes on corporations. Finally, we do

TABLE 30

RESULTS OF AUDIT: ESTIMATED ADDITIONS TO NET INCOME AFTER TAXES, ALL CORPORATIONS, ANNUALLY 1927–35

Year	*Estimated Additional Taxes Assessed in Subsequent Years in Respect of Year Shown*[a]	*Tax Rate*[b]	*Minimum Resulting Additional Net Income after Taxes*[c]	*Net Income after Taxes, Unaudited Data*		
				Corporations with Net Income	No Net Income	Total
	$ million	percent	$ million		$ million	
1927	68.7	13½	440	7,851	−2,472	5,379
1928	86.0	12	631	9,434	−2,391	7,043
1929	123.1	11	996	10,460	−2,914	7,546
1930	101.7	12	746	5,717	−4,878	839
1931	72.0	12	528	3,284	−6,971	−3,687
1932	63.5	13¾	398	1,867	−7,797	−5,930
1933	87.4	13.98	538	2,563	−5,533	−2,970
1934	95.5	13.94	589	3,679	−4,181	−502
1935	109.2	14.23	658	4,430	−3,469	961

[a] Figures derived from unpublished data supplied by Thomas C. Atkeson of the Bureau of Internal Revenue.

[b] For the years 1933–35 the normal tax rate has been adjusted upward to allow for the excess profits tax, since additional assessments for these years are partly composed of the latter.

[c] To find the additional net income before tax, the additional tax was divided by the tax rate; from the result the tax itself was then deducted. The figures shown in this column are minimum estimates because the treatment adopted makes no allowance for the reduction in the deficit of corporations previously reporting deficits but now subject to tax.

not yet have any information as to the industrial distribution of the additional assessments: only that portion of the totals in Table 30 which is applicable to groups other than Public Utilities, Steam Railroads and Communication represents understatement of income by the estimates used in this volume.

For all these reasons it has seemed to me best to make no use of the material shown in Table 30, which is presented merely in order to

underline the quantitative importance of the problem. Whether a thoroughgoing revision of the estimates to take account of audit by the Bureau of Internal Revenue would improve the agreement between the movement of published corporate income and the movement of the global estimates, we have no means of knowing in advance. In any case actual revision of the income totals must await publication of the results of the comprehensive study of the data upon which Mr. Atkeson is at present engaged.

Appendix C

INVENTORY STATISTICS